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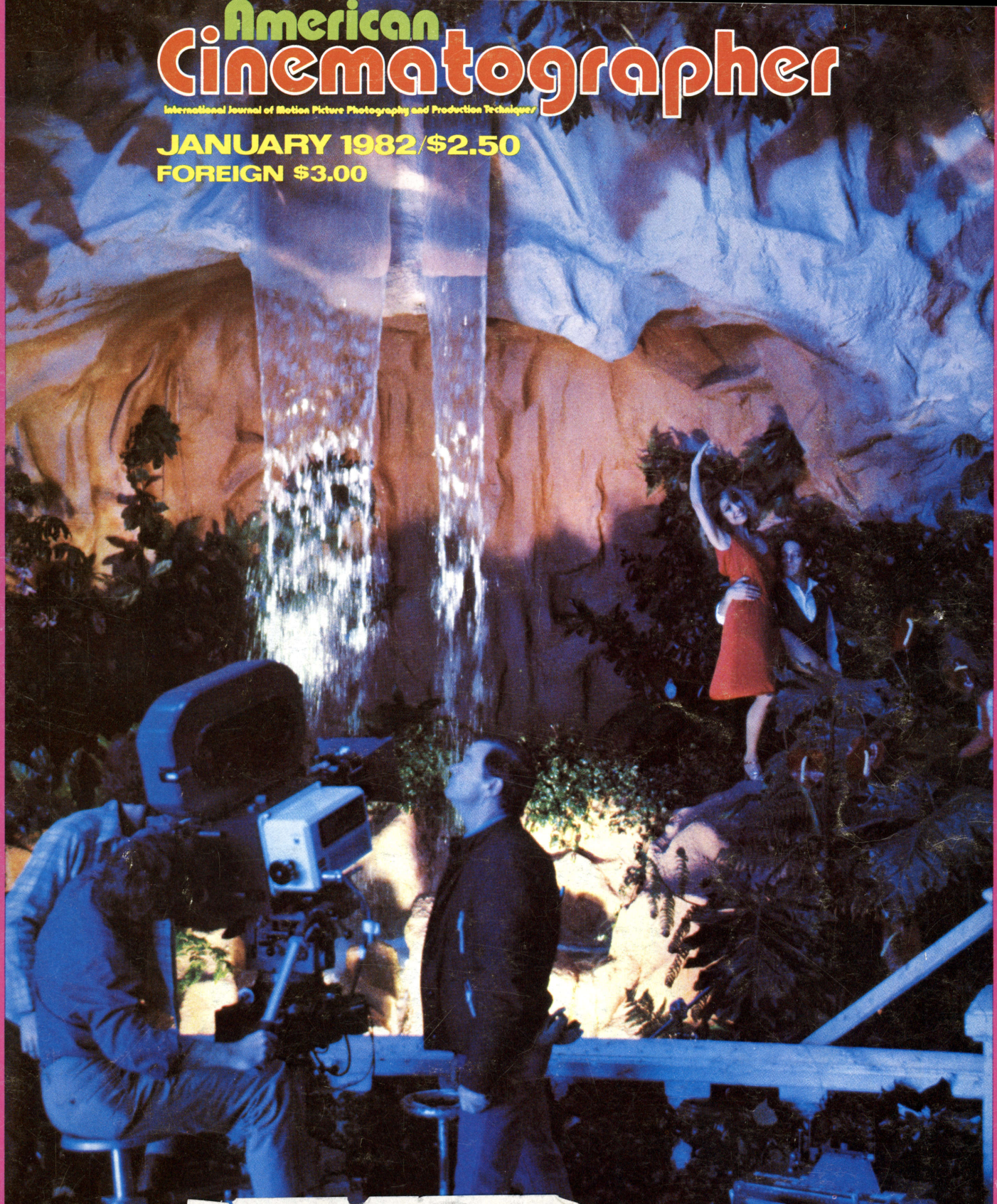

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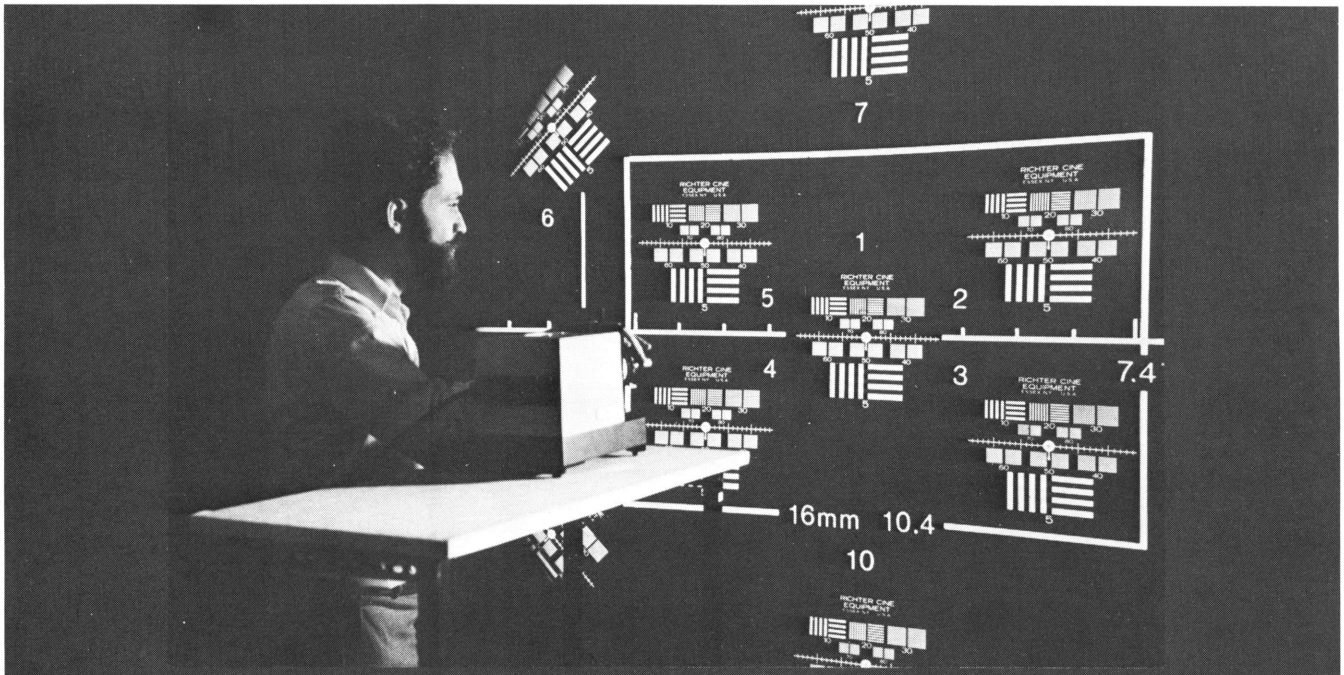
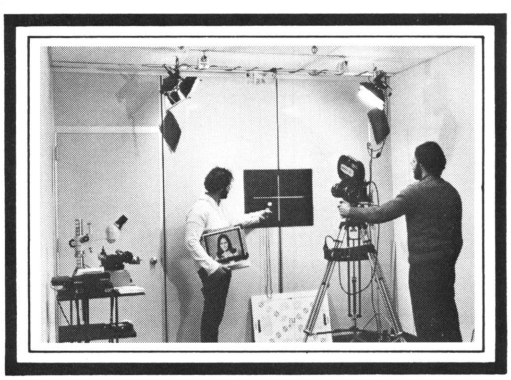
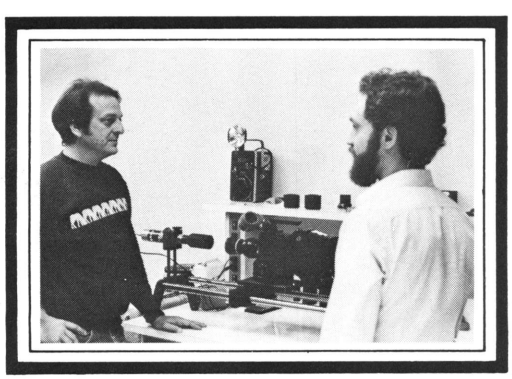
MATING FILM WITH VIDEO FOR "ONE FROM THE HEART"



Why be in the dark with your lenses?





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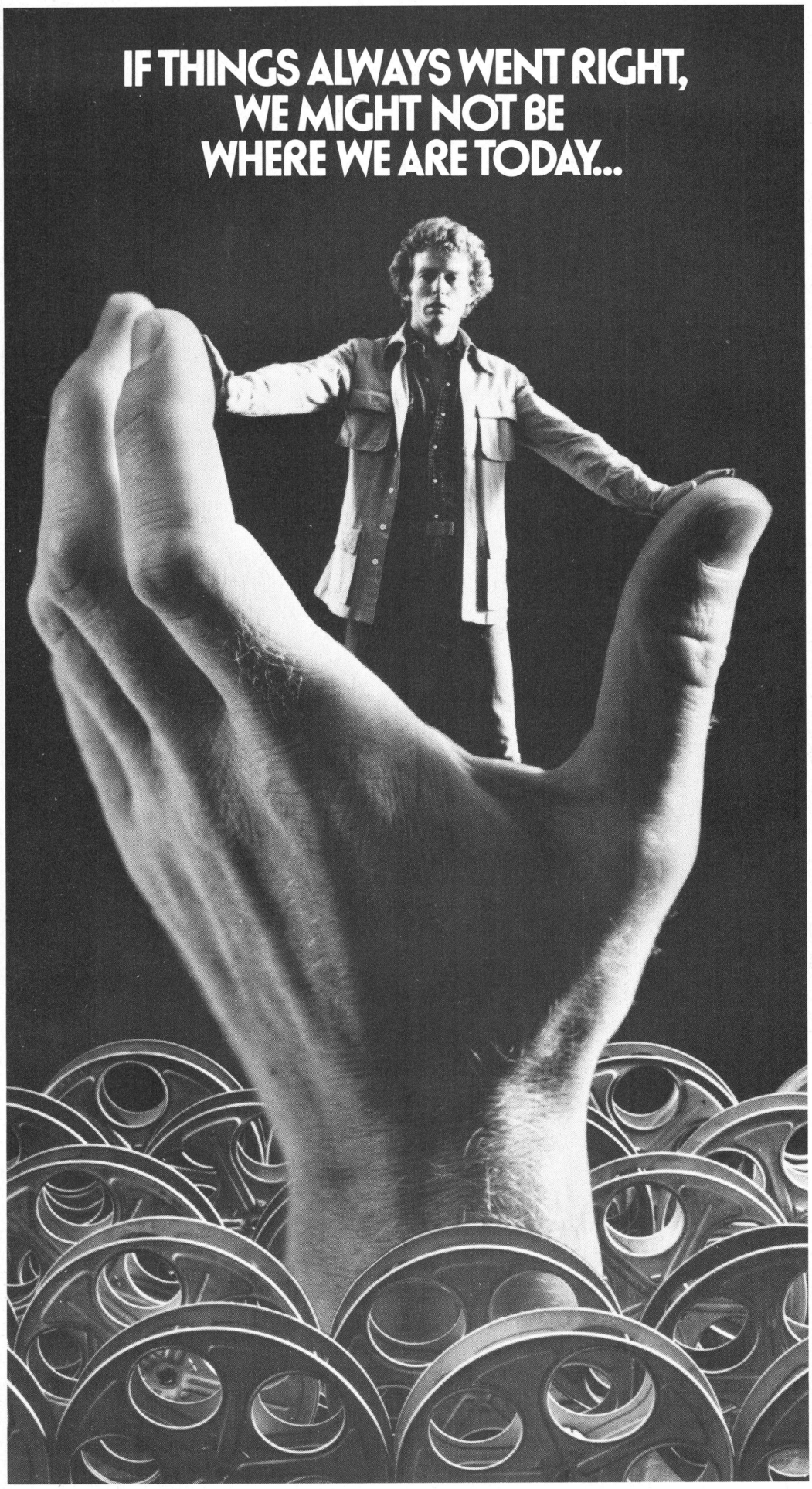

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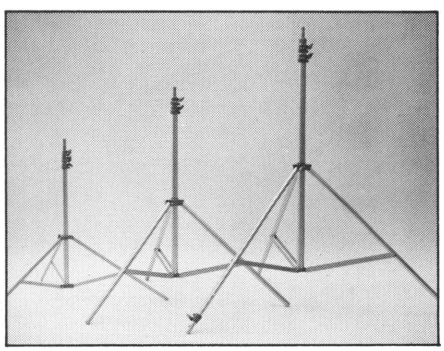

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International Journal of Motion Picture Photography and Production Techniques

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ON THE COVER: Camera crew prepares to shoot a scene with Teri Garr and Raul Julia in an imaginative grotto set on the sound stage at Zoetrope Studios for Francis Ford Coppola's ambitious "ONE FROM THE HEART", a Paramount Pictures release. Cover photograph by PETER SOREL.

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Why is Aäton alone?

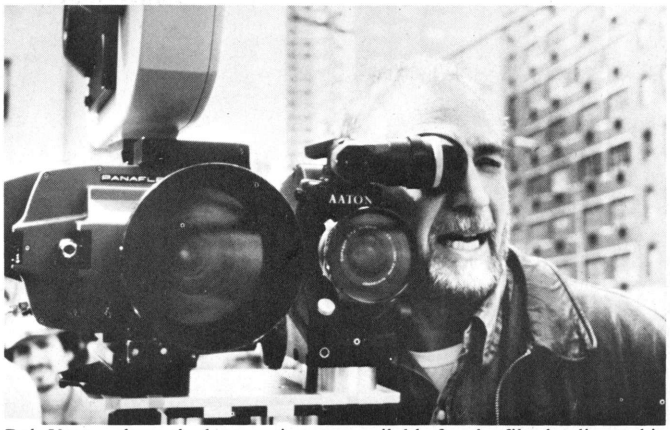
Super 16 is getting a lot of publicity* these days. The reasons are many, the first being simply the 40% increase of usable image dimensions for 35 mm blow up. That, plus high definition TV (in 1 : 1.66 format ratio, 1200 horizontal lines) is one of the principal motivations of going from 16 to Super 16. People are going from 35 to Super 16 as well. The reason is economics : not just the raw stock, but running expenses, cost of equipment purchase or rental.

But why is the Aäton 7LTR alone in being chosen for Super 16 applications? Why do discerning film-makers prefer the Aäton to other 16 mm cameras when it comes to blow-up?

The answer is image quality.

The Aäton 7LTR is the only 16 mm camera originally designed with both Super 16 and standard 16. This doesn't mean just an interchangeable aperture plate with a wider gate : any camera manufacturer can do that. It means ***optimum image steadiness : vertically, horizontally and in depth.***

Vertical steadiness is ensured by various means : some cameras have registration pins... With its absolutely linear claw movement, the Aäton LTR positive claw provides vertical steadiness in the range of 1/2000th of image dimensions.



Bob Young chose the best equipment available for the film he directed in order to study the relative merits of Super 16 and 35 mm. The results — very favorable for Super 16 — can be seen at Du Art Laboratories in New York. (Photo : Diane Young.)

The Aäton meets the same tolerances for **horizontal steadiness,** because the film is positioned laterally with micron accuracy at the gate. Some other cameras have no lateral positioning system whatsoever at the gate... and the projected images weave from left to right.

In-depth steadiness is obtained by maintaining the film firmly in the same plane at all times : this is easy in the LTR, because the film loop is long and flat, and the rear image pressure plate spring loaded so as to keep the film in place firmly. Such a system obviously provides better steadiness than one in which the film «floats» over the aperture.

With the progress of lenses and film stocks, with the promise of high definition TV to come, Super 16 has an enormous potential.

Film-makers : think about Super 16, the standard for 16 mm film. **Be demanding :** ask for more than just a bigger aperture.

Camera manufacturers : join us.
Super 16 is the future of the 16 mm film medium.

Aäton alone

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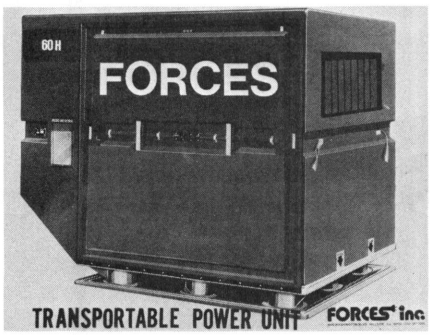
* Articles in the American Cinematographer. Sept. and Nov. 1981 by Irwin Young & Rune Ericson respectively, in Eyepiece (London) by David Samuelson : papers presented at SMPTE 1980 Technical Conference by Irwin Young, and at Film'81 in London.

WHAT'S NEW

IN PRODUCTS, SERVICES AND LITERATURE



AIR-TRANSPORTABLE DIESEL ELECTRIC GENERATOR

An air transportable diesel electric generator set offered by Forces, Inc., Hillside, Illinois, solves the cinematographer's problem of obtaining movie grade electricity at remote locations. ATG series generators are available in user's choice of 60 or 50 hertz, all standard voltages, and ratings of from 150 through 700 amps.

The sets are blimped, utilize crystal control of frequency to insure flicker free operation of HMI lighting systems and incorporate a temperature compensated digital frequency meter. Physical dimensions conform to ATA standards which permit the generators to be transported in B747, DC-10, L-1011 and A300 passenger aircraft as well as cargo planes.

The ATG series is available for rent or purchase through Forces, Inc.

For further information: Terry Johnson, Forces, Inc., (312) 547-5200.

•

TIFFEN INTRODUCES NEW SOFTNET DIFFUSION FILTERS

Nat Tiffen, President of Tiffen Manufacturing Corporation announces a new step forward in diffusion filters.

Sofnet diffusion filters are made of net material laminated between glass, ground and polished to Tiffen standards. These filters eliminate the need for stretching stockings and net material over your lens. They also eliminate guess work. When you work with Sofnet Diffusion filters the mesh and color are always the same. Supplied in black and white at present, other colors will be available soon.

Tiffen *Black Sofnet* filters will add a soft diffusion effect to your picture, without impairing the quality of the image. Blacks will stay black without turning white or grey. Sofnet filters will not create any halation effect where there are highlites. They will give bright colors a softer and more pleasing look.

Tiffen *White Sofnet* filters give a soft diffusion, adding a misty look. White Sofnet filters will give blacks a touch of white or grey, similar to a double fog effect. White Sofnet filters will give halation effects where there are highlites without detracting from the image.

Tiffen *Black Sofnet* and *White Sofnet* filters are supplied in densities one to three and are available in all sizes.

For more information contact your nearest Tiffen dealer or write Tiffen, 90 Oser Avenue, Hauppauge, New York 11788 (516) 273-2500.

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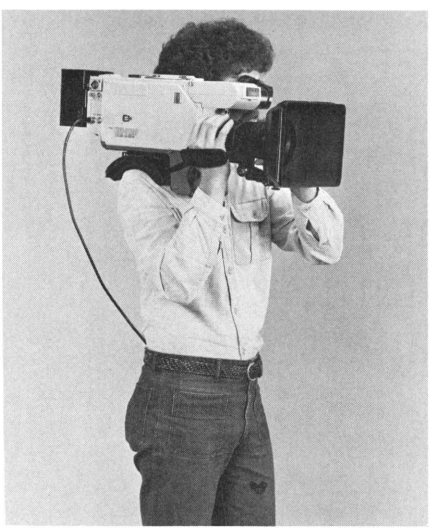


NEW "FILM LOOK" EFP MATTE BOX

Cinema Products Corporation announces the availability of the new "film look" matte box, designed for use with most of the popular Fujinon, Canon, and Angenieux lenses used with ENG/EFP video cameras. The "film look" EFP matte box is a full production matte box designed to give the "videographer" an extra measure of flexibility and filter control normally associated with motion picture cinematography and the "film look."

The new Cinema Products EFP matte box is ideal for shooting handheld. Extremely lightweight, and easy to mount, the EFP matte box is essentially a swing-away type matte box that maintains constant orientation. It features two rotatable filter stages, each accepting standard 4.5" diameter special effects filters such as star and fog filters, neutral grads, polarizing filters, etc.

The new Cinema Products EFP matte box is priced at $1200.

For further information, please contact Cinema Products Corp., 2037 Granville Avenue, Los Angeles, California 90025. Tel: (213) 478-0711 and (213) 477-1971.

•

DELUXE LABORATORIES INTRODUCES FILM REEL IDENTIFICATION SYSTEM

Deluxe Laboratories has pioneered a new system to end confusion in identifying feature film reels.

In making the announcement, Bud Stone, president of Deluxe Laboratories, said the new system—known as COLOREEL™—is the key to accurate film reel identification since it avoids the guesswork or hunting for written identification and prevents duplicated or missing reels.

"It is understandable why the old numbering system caused confusion since each feature film can require five or more reels and hundreds of prints, which are then remounted and handled countless times in film exchanges and projection booths across the country," said Mr. Stone, whose company has won several awards including an Oscar for technical developments in the film processing industry.

Deluxe, a 20th Century-Fox Film Corporation subsidiary, specializes in 70mm, 35mm, 16mm and Super 8 color and black and white motion picture film processing for theatrical, television, educational and television commercial producers.

Under the COLOREEL System every reel in a feature is given a distinct identifying color. "Reel one on every feature is always yellow, reel two is always red and so on," said Mr. Stone, explaining that a two-feet strip of the identifying color is automatically printed at the head and tail of every reel to guarantee that the COLOREEL key is the last wrap on the reel and immediately visible by color and number.

To facilitate the use of the COLOREEL System, shipment hard cards and film can labels have reminders of the COLOREEL sequence and corresponding reel numbers.

Free color charts of the COLOREEL sequence are available for projectionists, film exchanges and other film laboratories by writing to Deluxe Laboratories, 1377 North Serrano Avenue, Hollywood, CA 90027. ■

WET AND DRY
laboratory equipment

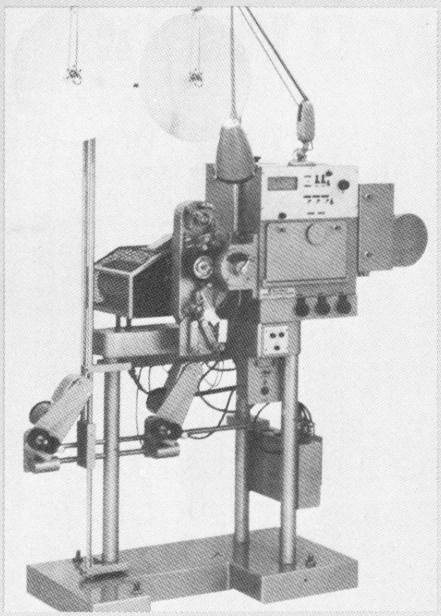
PRINTERS

Acme Model 37 16mm Step Contact Printer
Designed for printing dupe negatives, color separations, master positives. Daylight operation. ACME movement. Variable dissolve shutter 16-128 frames. Prints edge numbers on either side of film, has automatic light and shutter controlling devices, variable speed sync motor for speeds of 1½, 3, 6, 12, 16 and 24 fps. Film capacity, 1200 feet.
Rebuilt like new **$38,000.00**

Bell & Howell MDL 6100 CH Printer
Picture and sound, fader, H. Speed tape reader, sola regulator with power supply. New over $50,000.00. Excellent condition. (cc) **$33,500.00**

Bell & Howell MDL 6100 C Printer
Picture and sound, fader, H. speed tape reader, sola regulator, title superimpose capability, w/power supply. New over $50,000. Excellent condition. (cc) **$34,500.00**

Bell & Howell Seiki Optical Printer
35-16-S8. Complete with all movements and lens combinations. Liquid gate projection system. Unit is "Like New" — Original Price $125,000.00 (cc) Special Price ... **$85,000.00**



Bell & Howell MDL 6100 CT Additive Color Printer

Manual operation provides basic color and density balance. Includes three manually-operated light valves with 52 steps of trim. Model 6160A 1200W rectifier. Printer speed is 180/60 fpm. Film capacity, 2400 feet. One side edge light. Like new condition, less than 40 hours of operation. Current price, new $22,490.00
Our price, like new **$19,500.00**

Bell & Howell Model D 35mm Cine Printer
Rebuilt **$4995.00**

Bell & Howell Model J 16mm Cine Printer
Rebuilt **$5650.00**

6200MB Single Automatic light valve
Standard speed reader, rectifier and head.
New price $28,000.00 ..... **$17,500.00**

Bell & Howell Model JC Printer
With edge numbering light, very good condition **$5250.00**

Depue Optical Reduction Printer Model K3532
Daylite operating, rebuilt, good condition **$5500.00**

Depue 35-32 Reduction Printer
Hernfeld 35mm Printer w/shotgun color filter changer, used, as is ..... **$ 795.00**

Kodak 35-16mm Optical Sound Track Reduction Printer, rebuilt **$5200.00**

Depue 35-32 Fish-Schurman additive lamphouse
With DC power supply, as is **$2500.00**

Depue Light control Board
For use w/Depue Optical reduction printers. Provides 22 light changes, 75 or 150 scene changes, used ..... **$ 450.00**

DC Power Supply ..... **$ 495.00**

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Houston-Fearless Model S120 PN B&W 16/35 Hi-Speed Spray Processor
18-150 fpm. Excellent condition **$5500.00**

Jamieson Model 65 Ektachrome ME 4 35/16mm Film Processor
6 feet per minute. For 5038, 5256, 5257, 5258 or 110, 126, 135 Films. 220 volt Single or Three Phase, 50/60 Hz. Sold new $11,900.00. Good condition **$7150.00**

16mm Loop Elevator **$950.00**

Treise MDL ME-4 16/35 Color Negative Processor
35mm @ 50' per min. — 16mm @ 37' per min. complete with flowmeters, valves, heat exchanger, thermostats, air compressor for impingement air squeegees, many spare parts. Excell. cond. Original cost approximately $140,000.00 S/P **$65,000.00**

Houston Fearless Lab Master MDL L 16/35 N.P. Neg/Pos
With speeds to 40 fpm. Daylight load operation, open face construction. New cost approximately $8000.00 Used **$3995.00**

Fulton 16mm ME-4 Color Tube Type Processor
Good condition **$1695.00**

LAB ACCESSORIES

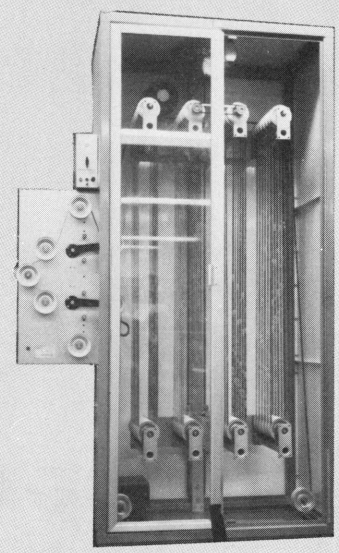
Hollywood Film Co. C2, Ultrasonic Film cleaner
New $15,000 ... Sale Price **$12,000.00**

Eastman Kodak 35mm Film Waxing Machine ..... **$ 1,050.00**

EL 13A, 16/35/70mm Film Dryer, sold new for $4950.00, our price, rebuilt **$3750.00**

Bell & Howell 16/35 Pedestal Splicers
Completely rebuilt **$2100.00**

Kodak 16mm Edge Numbering Machine
Overhauled, excellent **$2995.00**



Hollywood Film Co. Loop Cabinet
Mdl. L.C. 35250 Eliminates the need of rethreading your negatives in the printer for each pass. Outside roller bank is changeable for operation right to left or left to right ..... **$ 4,000**

ALL ITEMS SUBJECT TO PRIOR SALE

SPECIAL!

MGM LABS Surplus Printer Sale!

We have just obtained a wide variety of Bell & Howell model D & E printers from MGM Labs. Many of them can easily be made operable. Some with color subtractive lamphouses. All excellent for spares! Must be seen for pricing. No telephone quotes on this lot. Contact Mike Kelly for appointment. Sold on an "as is," "where is" basis. No reasonable offer refused.

Alan Gordon Enterprises has spare parts for many models of printers. Call with your requirements.

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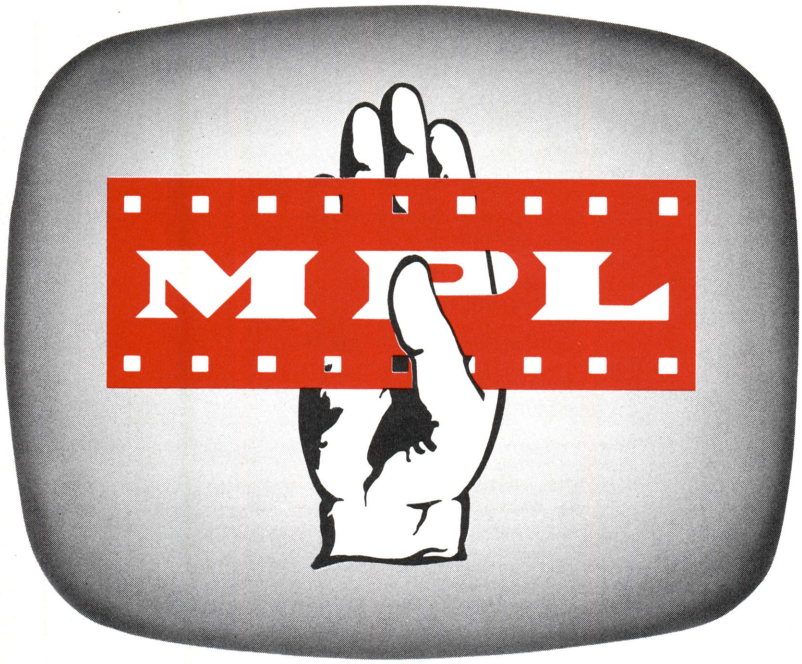

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That's as long a warranty as you get with most *new* cameras. And it's not that long because we're generous. Arriflexes in general hold up longer; and we make sure these are in top shape before we sell them. They're not new — but they're certainly better than most used cameras.

* On new cameras, Arriflex Corporation gives you a *two* year Warranty.

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THE BOOKSHELF

By GEORGE L. GEORGE

FACETS OF CINEMA

The updated and revised edition of the classical history of American motion pictures, THE MOVIES, is an imposing large-format volume that captures the many facets of the industry from its birth to the present in a panoramic view of its factual, scholarly and glamorous aspects. Eileen Bowser joins the original authors, Richard Griffith and Arthur Mayer, in this definitive, abundantly-illustrated survey (Simon & Schuster $24.95).

Drawing on their 40 years with the Disney Studios, Frank Thomas and Ollie Johnson pool their experience and artistry in a superb volume, DISNEY ANIMATION: THE ILLUSION OF LIFE, where their technical expertise and creative imagination combine in an absorbing text and spectacular illustrations (Abbeville $49.95). In WALT DISNEY'S TREASURY OF SILLY SYMPHONIES, a selection of 17 outstanding shorts displays Disney's style of animation at its best in some 180 full-color frame blowups (Abrams $28.50).

David Shipman's incomparable set of biographies, THE GREAT MOVIE STARS—THE GOLDEN YEARS and THE GREAT MOVIE STARS—THE INTERNATIONAL YEARS are reissued in completely revised editions. A brilliant blend of scholarship and nostalgia, these historic surveys provide career data, sound appraisals and critical comments in a comprehensive and entertaining *Who's Who* of the screen's perennial favorites (Hill & Wang $25 ea.).

Taylor and Burton, Bogart and Bacall, Tracy and Hepburn, Hope and Crosby are some of the great Hollywood teams that Garson Kanin discusses in TOGETHER AGAIN, a witty and warm appraisal of the special chemistry that propelled them to the top (Doubleday $24.95). In THE PURSUIT OF HAPPINESS, Stanley Cavell offers a discerning assessment of a *genre* he calls "comedy of remarriage," embracing such classic films as *It Happened One Night, Philadelphia Story* and *His Girl Friday,* where subtle psychological twists play artfully with delicate and risqué situations (Harvard U. Press $17.50).

In Bob Hope's THE LAST CHRISTMAS SHOW (as told to Pete Martin), the

farflung journeys undertaken by the comedian during the last 30 years to boost our servicemen's spirits are narrated with zest and humor in this engaging book (Doubleday $11.95). Charles Thompson's BOB HOPE: PORTRAIT OF A SUPERSTAR is an affectionate memoir, reprising the versatile performer's half-century of consistent popularity (St. Martin's $9.95).

The U.S. movies' recognized role as ambassador to the world of our values, lifestyle and culture is explored by Tony Thomas in HOLLYWOOD AND THE AMERICAN IMAGE, a perceptive and entertaining estimate of films and personalities that have best projected the special qualities of our people (Arlington $22.95). John Sandford's informative study, THE NEW GERMAN CINEMA, examines the social and economic conditions of its emergence in the 1960s, the directors who spearheaded the movement, and the principal concerns of their films (Barnes & Noble $25.75).

The 32nd edition of John Willis' comprehensive yearly pictorial and statistical record, SCREEN WORLD 1981 includes all movies released in the USA during the previous year. Its thorough coverage—10,000 entries and 1000 photographs—provides full data on films, personalities and other relevant matters (Crown $19.95).

A new biographical reference work edited by Roland Turner, THE ANNUAL OBITUARY 1980 recaps at length the achievements of some 100 entertainment world personalities. Alfred Hitchcock, Peter Sellers, John Lennon, Steve McQueen are among the 450 celebrities listed in the book who died during the year (St. Martin's $69.50).

THE DIRECTOR'S CRAFT

An impressive amount of data assembled by Dudley and Paul Andrews marks KENJI MIZOGUCHI, a study of the Japanese director, as a scholarly and informative volume. It contains a detailed biography, a critical survey of the films' subjects, themes and techniques, a complete filmography, synopses and notes, and a wealth of additional reference material (G. K. Hall $35).

Liam O'Leary's biography, REX INGRAM: MASTER OF THE SILENT SCREEN presents a lively and documented scrutiny of the director of such classics of the 20s as *The Four Horsemen of the Apocalypse, Scaramouche* and *The Garden of Allah.* Ingram's innovative techniques and perfectionism proved in the end to be his downfall (Barnes & Noble $28.50).

Valuable additions to G. K. Hall's excellent "Twayne Theatrical Arts" series deal with two reputed directors, LINDSAY ANDERSON by Allison Graham ($15.95) and LEWIS MILESTONE by Joseph R. Millichap ($14.95), and producer SAMUEL GOLDWYN by Lawrence J. Epstein (14.95). These extensively researched studies carry in-depth evaluations of their subjects' work and background, full filmographies, bibliographies and other pertinent facts.

In SIR LARRY, Thomas Kiernan sketches a revealing portrait of Laurence Olivier, capturing the essence of the brilliant actor's career and private life, and also assessing his outstanding achievements as director of Academy Award winners *Henry V* and *Hamlet* (Times Books $16.95).

THE PERSONALITY CULT

Three superstars, whose lives crossed in a spectacular display of emotional fireworks, are the objects of simultaneously published books. Kitty Kelley's ELIZABETH TAYLOR: THE LAST STAR (Simon & Schuster $14.95), RICHARD BURTON by Paul Ferris (Coward McCann Geoghegan $13.95) and EDDIE: MY LIFE, MY LOVES by Eddie Fisher (Harper & Row $14.95) dovetail—to some extent—in their accounts of their headline-making entanglements, while disclosing intimate aspects of boudoir behavior, fascinating details of professional and personal relationships, and candid insights into life at the top.

In THE FILMS OF JENNIFER JONES, W. Franklyn Moshier draws a loving portrait of the actress, praising her talent in a variety of roles with leading male stars under the guidance of outstanding directors (Moshier, 312 Teresita Blvd., San Francisco, CA 94127; $18.50 + $1 handling).

David Conover, the photographer who discovered Marilyn Monroe on a factory assembly line, evokes, in FINDING MARILYN, his friendship with the star, who turned to him during troubled episodes of her life (Grosset & Dunlap $14.95).

A well illustrated biography of Goldie Hawn by Connie Berman, SOLID GOLDIE, reveals a talented, intelligent and ambitious woman beneath the exterior of the sexy dumb blonde she projects in her movies (Fireside/S&S $8.95). ■

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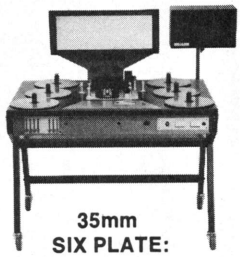

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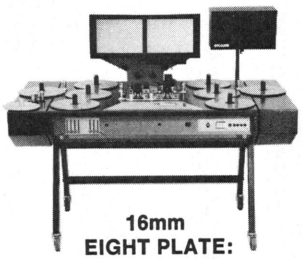

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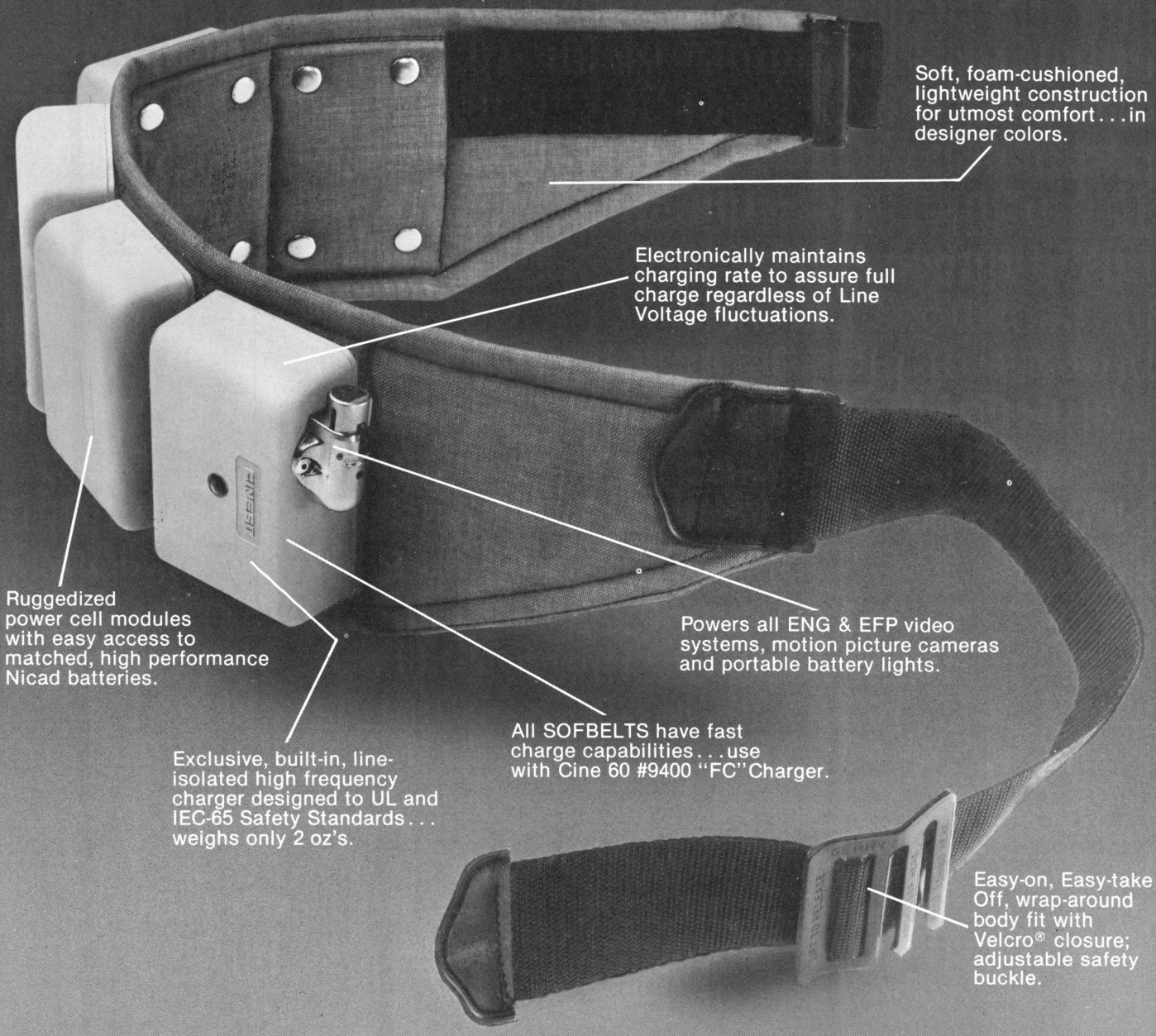

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CINEMA WORKSHOP

By ANTON WILSON

NICAD CELL CONSTRUCTION

We have been discussing various aspects of NiCad batteries. At this stage, a close look at the actual inside of a NiCad cell should help clarify some of the points that have been made. FIGURE 1 is a cross section of a typical NiCad cell. The heart of the cell is the two active plates. The negative plate or cathode is made of cadmium and impregnated with cadmium hydroxide. The positive plate or anode is made of sintered nickel powder and is impregnated with nickel hydroxide. Two tissue-thin separators are placed between the plates. These separators are usually made of polypropalene or a similar material that is both absorbent (to hold the electrolyte) and a good insulator.

These four components are then rolled up like a jelly roll to form the cell as illustrated. In other words, the alternating plates of positive-separator-negative-separator-positive-etc. are really all part of one set of four continuous sheets that have been rolled up, spiralling from the center to the outside of the case. Note also that during the impregnation of the negative plate, a small portion along the lower edge of the plate is left without cadmium hydroxide. When the plates are rolled up into the jelly roll, this thin raw lower edge protrudes from the roll and contacts the bottom of the case. This forms the negative tab or negative connection to the NiCad cell. Likewise, note that a small area of the upper edge of the anode is also left unimpregnated. Similarly, this edge protrudes out of the top of the formed roll, making contact with the positive tab which is welded to the cover plate which is welded to the cap or positive terminal of the cell. In FIGURES 1 and 2 it can be seen that the gasket performs two vital functions. It is the insulator between the cover plate (positive) and the case (negative), and it provides the airtight seal that prevents evaporation of the electrolyte.

FIGURE 2 is a close-up of the safety vent mechanism. This particular unit is called a resealable vent and is the much preferred design. Note the small hole located dead center in the cover plate under the rubber plate. Under normal circumstances, the spring pressure on the seal plate presses the rubber plate against the cover plate with sufficient force that no gases or fluid can escape through the aforementioned hole.

The cell for all intents and purposes is "sealed," as its name implies. However, if improper fast charging, high discharge currents, or over discharge and cell reversal lead to excessive gassing, the pressure within the cell can rise beyond the design limits, creating a potential safety problem. Before this point is reached, the pressure within the cell will be stronger than the calibrated spring tension of the vent. The rubber plate will be forced back

Continued on Page 95

FIGURE 1—Structural design of NiCad cell.

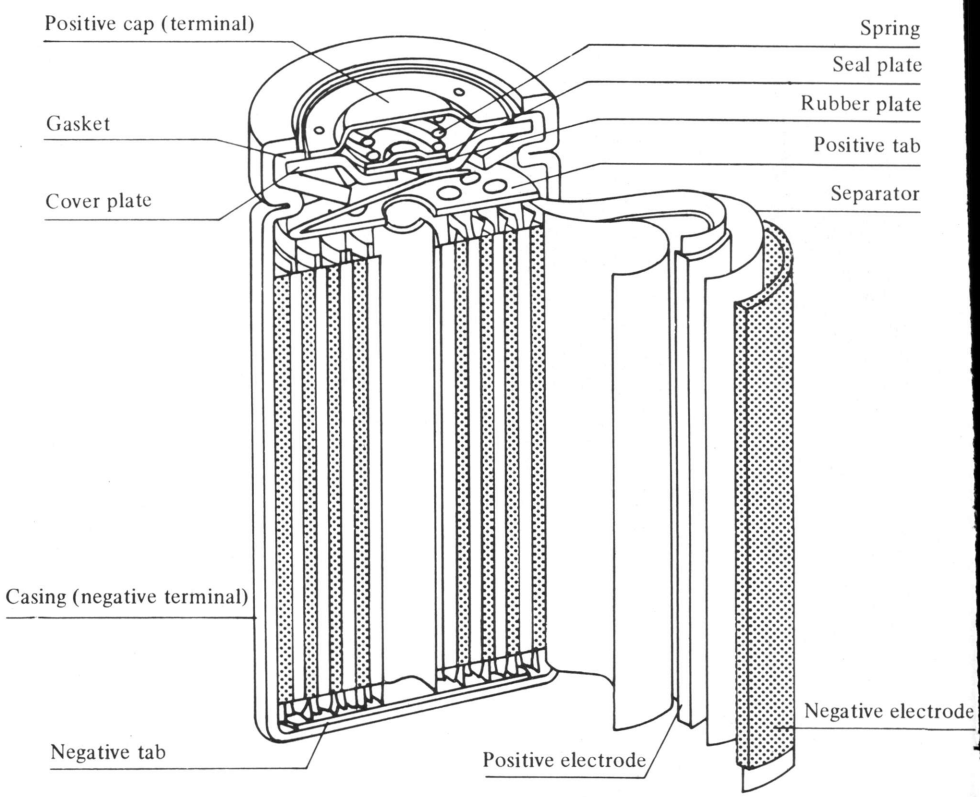
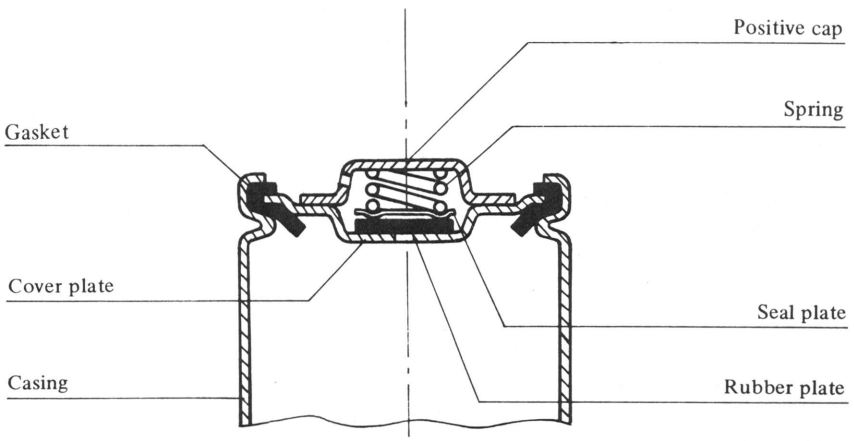
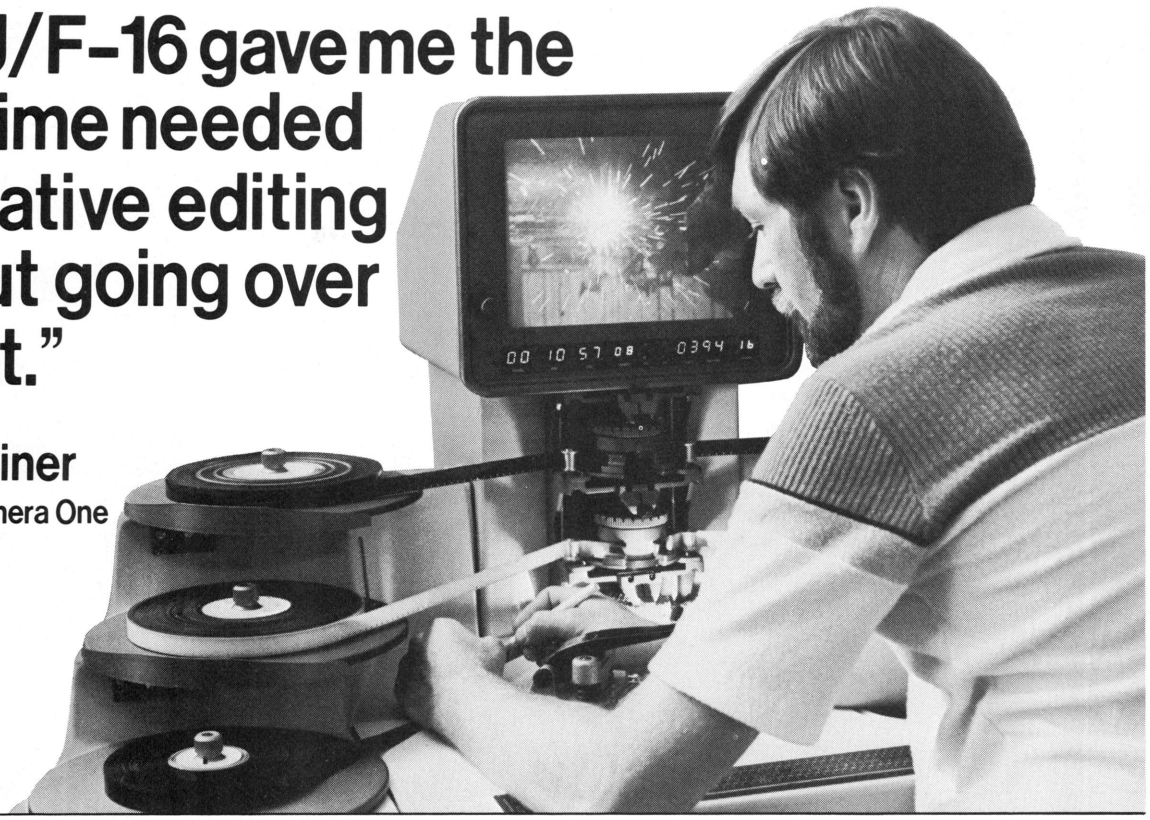


FIGURE 2—Closeup of safety vent mechanism (Figures courtesy of Sanyo Electric).



"The U/F-16 gave me the extra time needed for creative editing without going over budget."



Gray Warriner

President, Camera One Productions

"Having reliable editing equipment to work with is just as important as having an absolutely reliable camera. Because the editing room is where the real work begins. It is there that you can make or break a film!" says Gray Warriner, the Seattle-based filmmaker whose recent industrial documentary *"Protein From the Sea"* (made for Alaska Native Film Productions) has already won several prestigious awards, including the Cine Golden Eagle, the Indy Award, and the Eastman Award.

The U/F-16 to the Rescue

"I had always planned on buying a good 16 mm editing table. I was still researching the market when, during the post-production on *'Protein From the Sea,'* two rented flatbeds broke down on me: one right after the other. The film absolutely had to be finished on time. And the deadline was approaching fast.

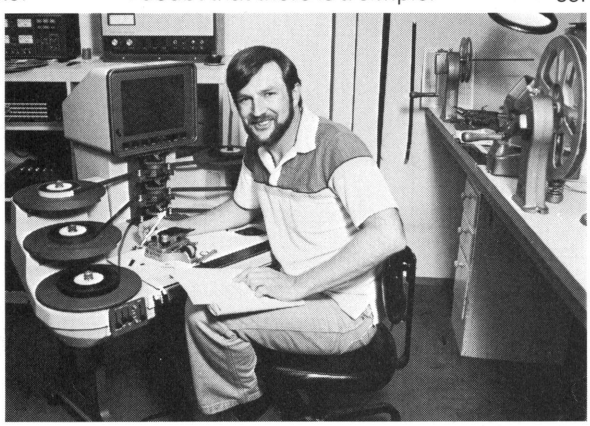
"I needed a dependable machine. The simpler, the better. While the U/F-16 editing console did not look like a conventional flatbed editor, there was Cinema Products' reputation for innovative, yet rugged and dependable equipment behind it.

"I got my U/F-16 by airfreight two days after I ordered it, and was able to complete the film on schedule.

A Dependable "Upright" Flatbed

"What makes the U/F-16 so dependable is that it is basically a mechanical system, combining the best features of an upright editor with the sophisticated features of a modern flatbed. No torque motors, no complicated relays, no extraneous electronics.

"I doubt that there is a simpler threading path possible. There is only one large drive sprocket. And the three-tiered arrangement of the platters means that you don't have to snake the film around idler rollers to get to the picture or sound heads. When you make lots of quick cuts in a film like *'Protein From the Sea'* that means, literally, hours of saved time!



"The offset stacking of the film paths means that everything is close to you, within easy reach. It also provides for more available working space than you normally get even on larger tables.

"An extra bonus is that its lightweight, compact design also makes the U/F-16 very portable. It fits through standard doorways, and can be easily transported in a small van. Even in a mid-sized passenger car, if need be.

Simple to Service

"You don't have to be a technician to service the U/F-16. If a belt works loose, you can check it out immediately without calling in an electronics engineer. Everything about the U/F-16 is readily accessible. The owner's manual covers almost everything that can possibly go wrong. If you can read, you can fix it. It's that simple.

"Besides, the CP service people are only a phone call away. If any real problem were to develop, they could talk me through it. If the trouble were in any of the modular electronic circuit boards, I could simply pop it out and pop in a replacement board.

"There is no question in my mind that much of the success of *'Protein From The Sea'* is due to the U/F-16. It gave me the extra time I needed for creative editing without going over budget."

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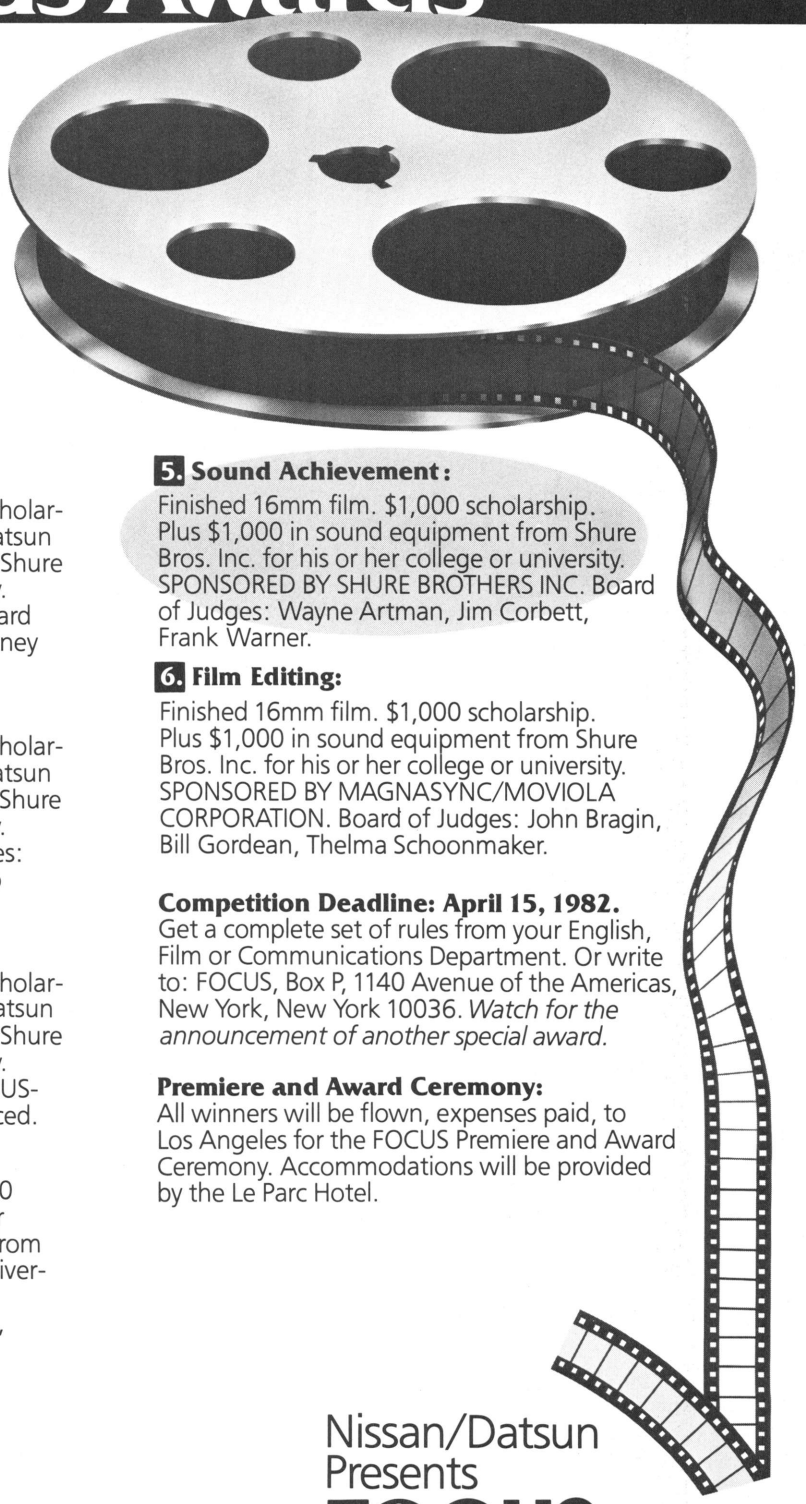

Enter your best work in the Sixth Annual FOCUS Film Competition.

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Enter your best work now.* This may be a unique opportunity for you.

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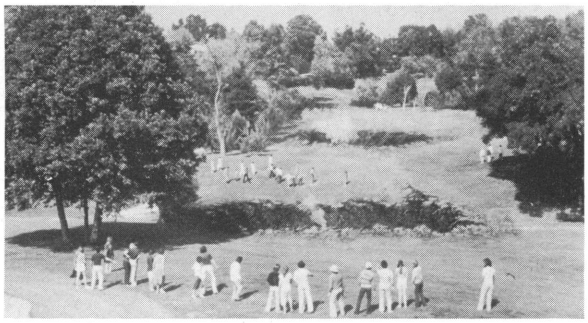

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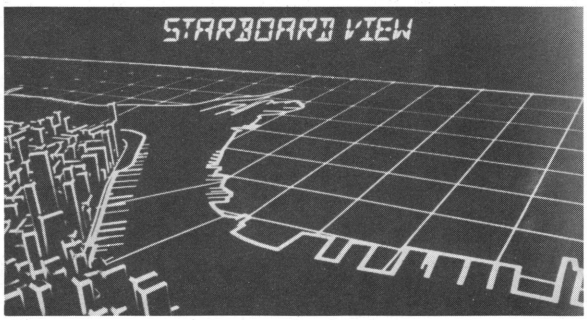

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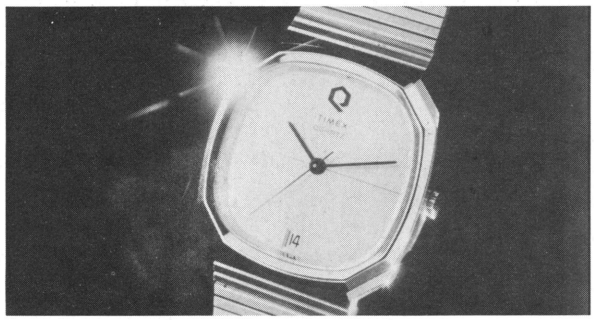

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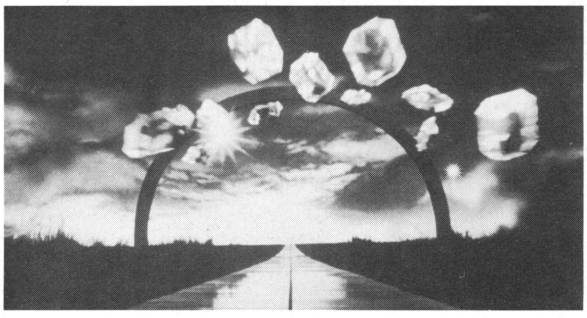

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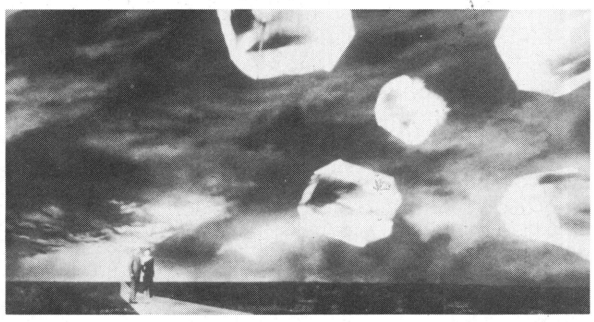

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TALKING TECHNICALLY

By DAVID W. SAMUELSON

3D SHOOTING SIMPLIFIED

Yet again there is a resurgence of interest in making 3D films. When one such film scores an outstanding success at the box office, all of a sudden there are, according to Variety, at least 10 more on the stocks and we equipment suppliers are then called upon to supply suitable 3D camera rigs.

Fortunately the advent of modern cameras has made it easier to satisfy the demand than heretofore.

Taking it for granted that the method of presentation will be by the use of Polaroid glasses the basic requirements for photography and projection are quite simple and clear-cut.

We need to produce two images in such a manner that their optical axes are separated by a distance as close to 2½ inches (the same as human eyes) as possible and which can be converged just like human eyes do when looking at something close.

Taking it for granted that the two images will be produced by two individual lenses, then those lenses must be exactly the same focal length and their vertical optical axes must be exactly co-incident. If two cameras are used they must run at the same speed.

What sorts out the men from the boys is how well the system is engineered to create reality and minimise eye strain.

Quite satisfactory 3D for small screens and experimental purposes can be shot using two 16mm Arriflex 16SR cameras mounted side-by-side and fitting them with matched pairs of fixed-focal-length lenses. The advantage of this particular model over others is that it is relatively slim, being slightly less than four inches wide, making possible reasonably close interocular spacing without recourse to any optical devices. While a four-inch interocular separation is far from ideal for serious work, it will suffice for many purposes.

In addition, the SR's have crystal-controlled motors, making it possible to run two cameras at the same speed. Ideally, the two cameras should run in shutter phase sync, but out-of-phase running will do for shots where there is no fast movement. Additionally SRs can be loaded from the rear, so you don't have to demount the right hand camera to re-load the film.

Pairs of Aaton or CP GSMO cameras might equally well be used, but with increased separation, or Paillard Bolex EBNs or ELs, if you don't mind taking the rig apart every time a re-load is required. No two readily available 35mm cameras are narrow enough to be mounted side by side in such a simple manner.

For large screens and rather more demanding quality standards life isn't so easy, if for no other reason than that overwide and incorrect interocular separation causes gross distortion when shooting closeups and miniaturization in long shots. Consequently, when pairs of wide-bodied cameras are used, prisms, mirrors or even beam splitters must be placed in front of the lenses to get the optical axes acceptably close together.

For all 3D shooting the depth content of each scene needs to be carefully controlled so that the limitations of the reproduction system are not exceeded.

We at Samuelsons supply a two-camera system with specially designed prisms in front of the lenses which make possible a minimum separation of less than two inches with lenses of 50mm focal-length or longer, and three inches with a 32mm and 40mm, which is very acceptable.

In addition to the two-camera concept, there are systems available which photograph two images onto a single strip of film, either side-by-side or one above the other. Some of these cameras have very ingenious lens systems which make shooting 3D a relatively "normal" sort of an operation, if with some limitations.

Recently I saw a demonstration of a system which uses a single modified lens on a single camera and which can be projected in a normal manner. The film even looked normal when viewed without glasses, but has a depth effect when viewed with red and green glasses.

For their STEREO 70 system the Russians photograph two images side-by-side on a 70mm (sic) negative and can use pairs of lenses as wide as 28mm focal-length and can achieve a minimum separation of 26mm, which is very useful when you need to shoot big closeups without distortion. For projection they use a double lens in a single 70mm projector.

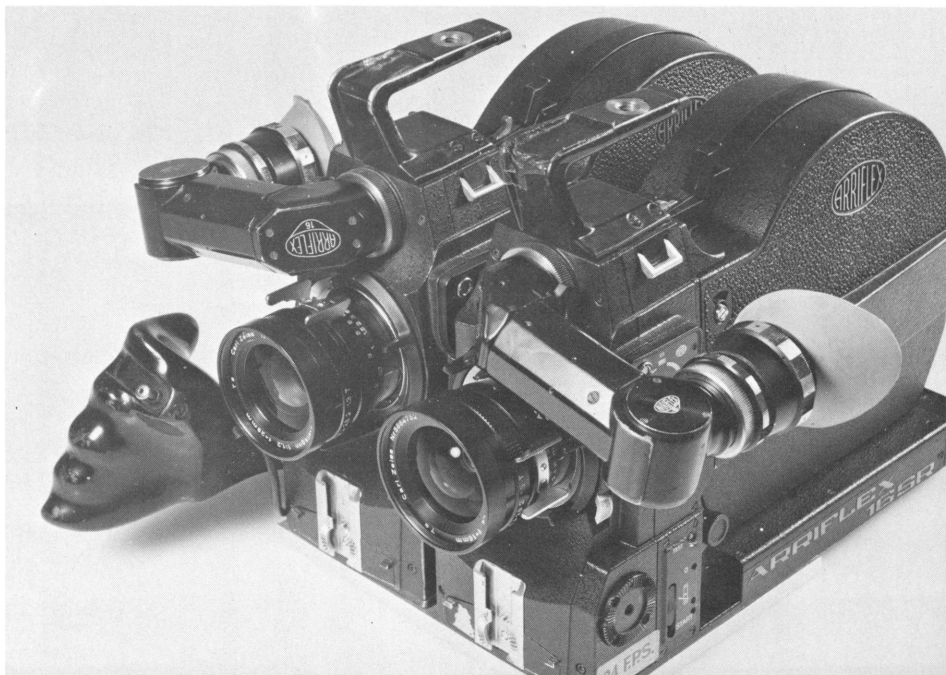
In addition to interocular separation, which ideally should be adjustable to control the degree of stereo effect with different focal-length lenses, a 3D camera system must also have variable interocular convergence. This is necessary in order to control the position of the "stereo window", or "footlights", as the Russians call it.

On a two-camera rig, interocular convergence can be achieved either by toeing in one or both of the cameras or by sliding the lenses across the film in opposite directions in the manner of cross front still camera.

However it is done, the crunch comes when you shoot alignment tests. To check

Continued on Page 57

Quite satisfactory 3D for small screens and experimental purposes can be shot using two 16mm Arriflex 16SR cameras mounted side-by-side and fitted with matched pairs of fixed focal length lenses. Crystal-controlled motors make it possible to run the two cameras at the same speed.



Introducing Electronic Cinematography

Ikegami takes the film concept, cinematography, and makes it a video reality. And what makes this possible is the Ikegami EC-35 electronic cinematography camera. It looks, handles and performs like a 35mm cine camera. So now you can shoot film-quality television productions on video tape instead of film... faster, easier and at lower cost.

The unique optical system accepts a variety of prime and zoom lenses designed by Canon and Fujinon. And, because the lens ideas come from 35mm cine cameras, you'll find T-stops as well as familiar viewing angles.

To bring out the best in the unique optical system, advanced electronic circuitry is employed. For example, a specially designed FET preamp, used in conjunction with 2/3" low-capacitance diode-gun Plumbicon* tubes, operated in a high voltage mode, deliver an extra-ordinary S/N of 57 dB. The EC-35's ability to compress highlights while retaining detail, combined with a full complement of operational automatics, make it probably the best video camera available today.

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For a demonstration of electronic cinematography, contact Ikegami.

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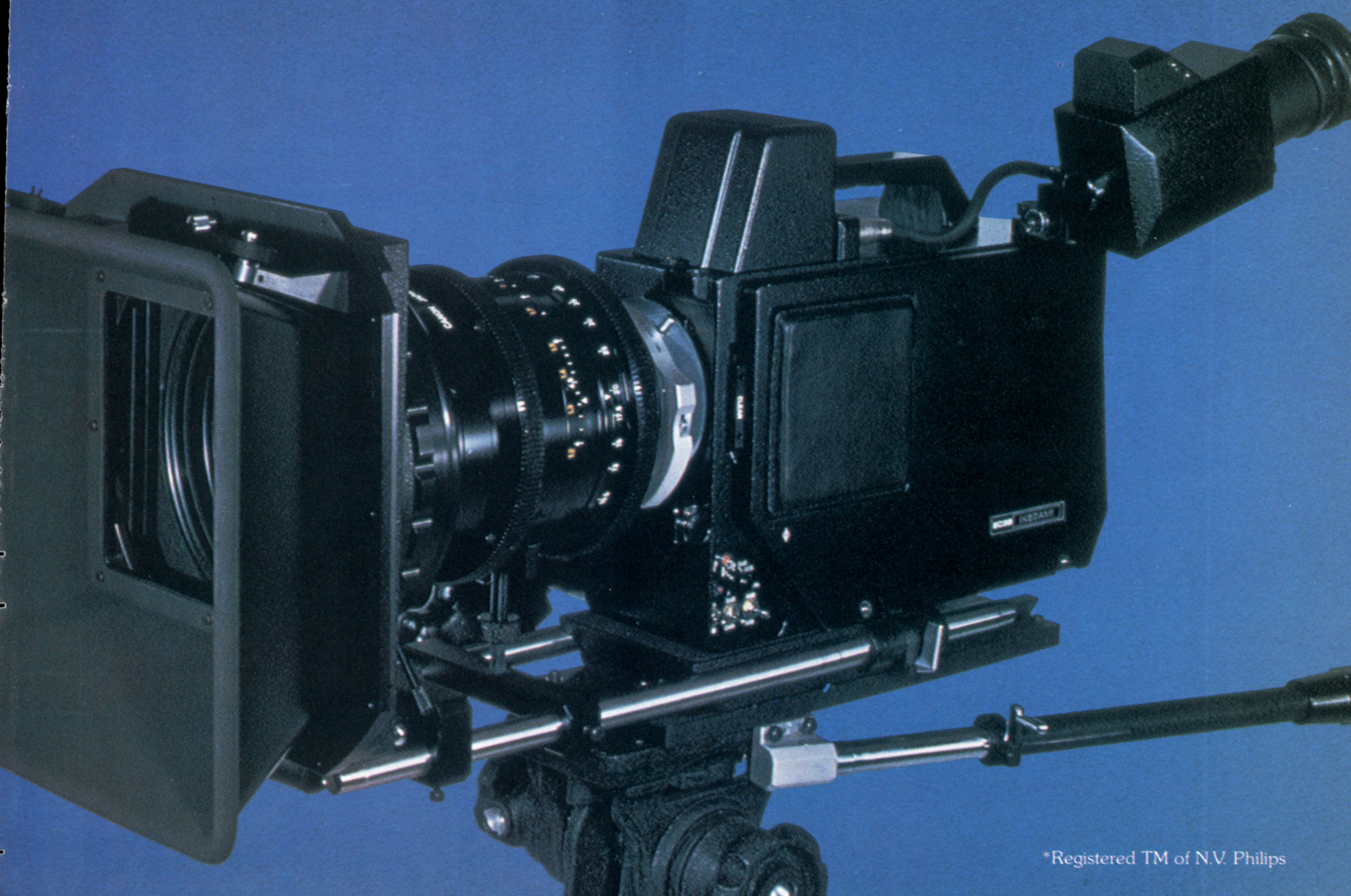

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MATING FILM WITH VIDEO FOR "ONE FROM THE HEART"

For his latest production Francis Ford Coppola relies heavily upon the electronic medium to pre-shoot and pre-edit, thus saving time and money

As this issue of *American Cinematographer* goes to press, down-to-the-wire post-production is nearing completion on Francis Ford Coppola's long-awaited production of ONE FROM THE HEART, described as "a fantasy about romantic love, jealousy and sex." It stars Frederic Forrest, Teri Garr, Raul Julia, Nastassia Kinski, Lainie Kazan (all members of Zoetrope's "repertory company") and Harry Dean Stanton.

ONE FROM THE HEART, which Coppola directed, marks the first film to be made by Zoetrope Studios utilizing the first-stage technology of the "electronic cinema."

Coppola first publicly heralded the advent of the "electronic cinema" at the 51st Annual Academy of Motion Picture Arts and Sciences telecast (April 9, 1979) when he said:

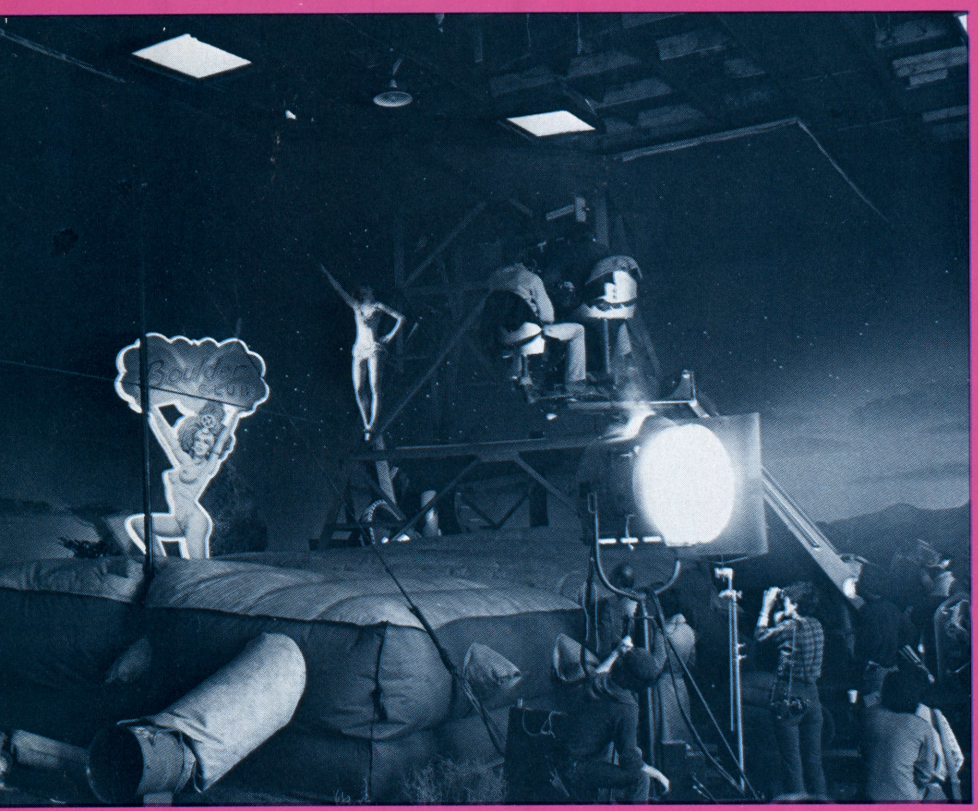
"We're on the eve of something that's going to make the Industrial Revolution look like a small out-of-town tryout. I can see a communications revolution that's about movies and art and music and digital electronics and satellites, but above all, *human* talent—and it's going to make the masters of the cinema, from whom we've inherited this business, believe things that they would have thought impossible."

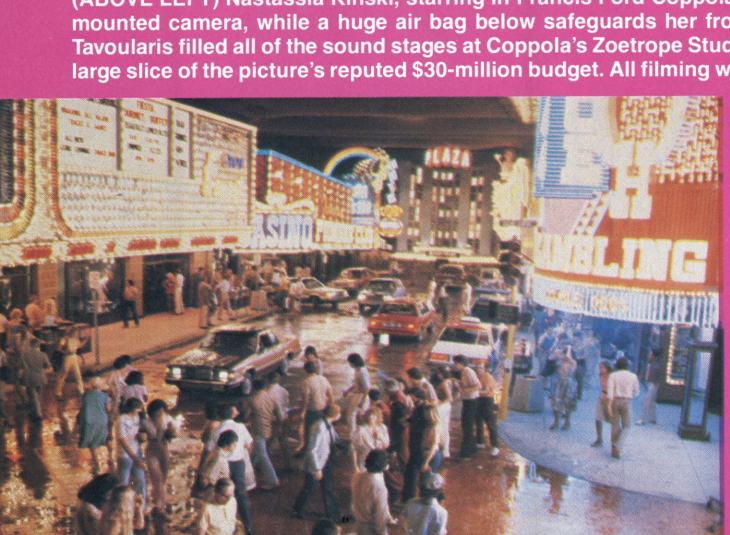
Still in its early development, the "electronic cinema" makes possible the "previsualization" of the planned film. This begins with the process of optical transfer of storyboard sketches onto a video disc. Then the recorded dialogue of the film, plus music and sound, is added to the disc, producing a pictorial and audio form of the script months prior to the start of filming. With the commencement of principal photography, the "electronic cinema" enables the filmmaker to view each scene on video monitors while it is being shot. The process further allows the director to control and adjust all of his elements—lights, camera moves, direction and even editing—as he shoots.

ONE FROM THE HEART features songs and music composed by Tom Waits and dance sequences choreographed by Kenny Ortega, under the guidance of Gene Kelly, Executive for Musical Production for Zoetrope.

ONE FROM THE HEART marks the first time in recent motion picture history that actual existing locales have been re-created on Hollywood soundstages. Since September of last year, more than 200 craftsmen worked at constructing the city of Las Vegas—suburban streets, motels, apartments, a department store, McCarran Airport Terminal, four corners of downtown Las Vegas in full scale, plus the Las Vegas Strip with all its neon glitter in miniature. Thus, Coppola was able to direct the film with total control over the environment's elements, such as time of day, weather and traffic.

Under the aegis of Academy Award-winning production designer Dean Tavou-





(ABOVE LEFT) Nastassia Kinski, starring in Francis Ford Coppola's "ONE FROM THE HEART" does a wire-walking stint before the crane-mounted camera, while a huge air bag below safeguards her from injury. (BELOW) Huge Las Vegas sets by Production Designer Dean Tavoularis filled all of the sound stages at Coppola's Zoetrope Studios in Hollywood. The highly stylized fantasy sets probably account for a large slice of the picture's reputed $30-million budget. All filming was done in the studio and no attempt was made at realism.

laris, attention was paid to even the smallest detail on sets that eventually utilized eight of Zoetrope's nine soundstages. The downtown Las Vegas set, which occupied Stages 3 and 8, used more than 125,000 light bulbs and over ten miles of flashing neon.

Capturing the excitement of this dazzling cityscape under studio roofs was Vittorio Storaro, who brought his brilliant cinematographic technique to ONE FROM THE HEART as he did so strikingly on APOCALYPSE NOW, for which he received an Academy Award.

When *American Cinematographer* asked Storaro to describe his approach to the photographic visualization of ONE FROM THE HEART, he said that he would prefer that the magazine publish a statement which he had previously prepared for another publication and which precisely expresses his views. Acceding to his request, we are publishing word-for-

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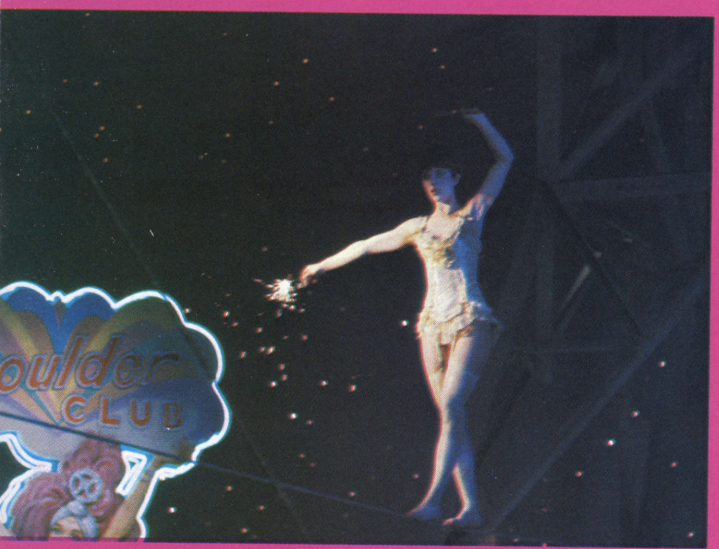

(LEFT) A low-angle dolly shot is rehearsed on the Las Vegas Fremont Street set in the studio. (RIGHT) Vittorio Storaro (who has "Photography by" credit on the picture) directs the placement of a light. Ron Garcia is credited as Director of Photography. (BELOW LEFT) A stylized entrance area of the McCarran Airport in Las Vegas was built outside one of the sound stages at Zoetrope Studios. (RIGHT) Skillfully designed and executed forced perspective made the Las Vegas street sets seem even longer than they actually were.

word the following statement which he provided:

"It is an attempt of reunification between two different energetic poles, two natures that are equivalent even though they belong to opposite signs, both being part of what we call the visible light: the life.

"Male and female; positive and negative; nature and technology; night and day; heat and cold; light and shadow.

"For the theory of the contrast, these colors *being* contrastingly *close, intensify, starting a continuous conflict of personality; they could very well co-exist, but they fight because of the fear of being overwhelmed by the other until the awareness that their moving energy unequivocally leads to the conjunction of their spiritual forces.*

"It is as if we saw the components of light, separated by the prism of the life in that togetherness of radiations of distant wave lengths that are called 'colors' and then rejoined, through the lens of evolution in a white light is our aim: the equilibrium, the maturity.

"The theatre of this conflict: Vegas, like the representation of the affirmation of a part of the civil world on nature, the light on the desert.

"The sunset, like the loss of the Sun, is the loss of awareness; Vegas rises with the Moon, like the primitive element.

"On Saturday evening, the organisms, with the necessity to disperse energy through activity, search the bright colors. The lights of Vegas break the equilibrium of nature, change the heartbeats, increase the metabolism. Colors such as "RED," *the symbol of conquest, lights above the town, has the tendency of increasing the blood pressure;* "YELLOW" *and* "ORANGE" *stimulate the nervous vascular system and the cardiac* frequency.

"The Saturday evening is the revealer of the forbidden dreams of the unconscious, a removal of our hidden side.

"If the nature, during the dusk, brings a respite from emotions, towards a physical and psychological need for rest, the "GREEN" *of conservation and the* "BLUE" *of the night that have a regenerative effect, lead the autonomous nervous system towards a decrease of its functions, a reduced hormonal secretion; Vegas has a* catabolic *effect, its lights and its colors impose the renewal of the interrupted activity, the increase of the metabolism and of the endocrine secretions is induced by the high wave length to undertake the conquest on the primitive man.*

"The conflict between "PURPLE-BLUE-GREEN," *the "reentering" colors, and* "RED-ORANGE-YELLOW," *the "going-out" colors, is revived. This is the representation through colors of the chromatic spectrum, of the emotions and state of soul that distinguishes our separate moments of life.*

"The unlimited desire of love that exists in mankind leads this togetherness of emotions-radiations to a union in a light that comprises them all, and of which all are a part; the human being is not two separate halves, but the union and not distinction between man and woman;

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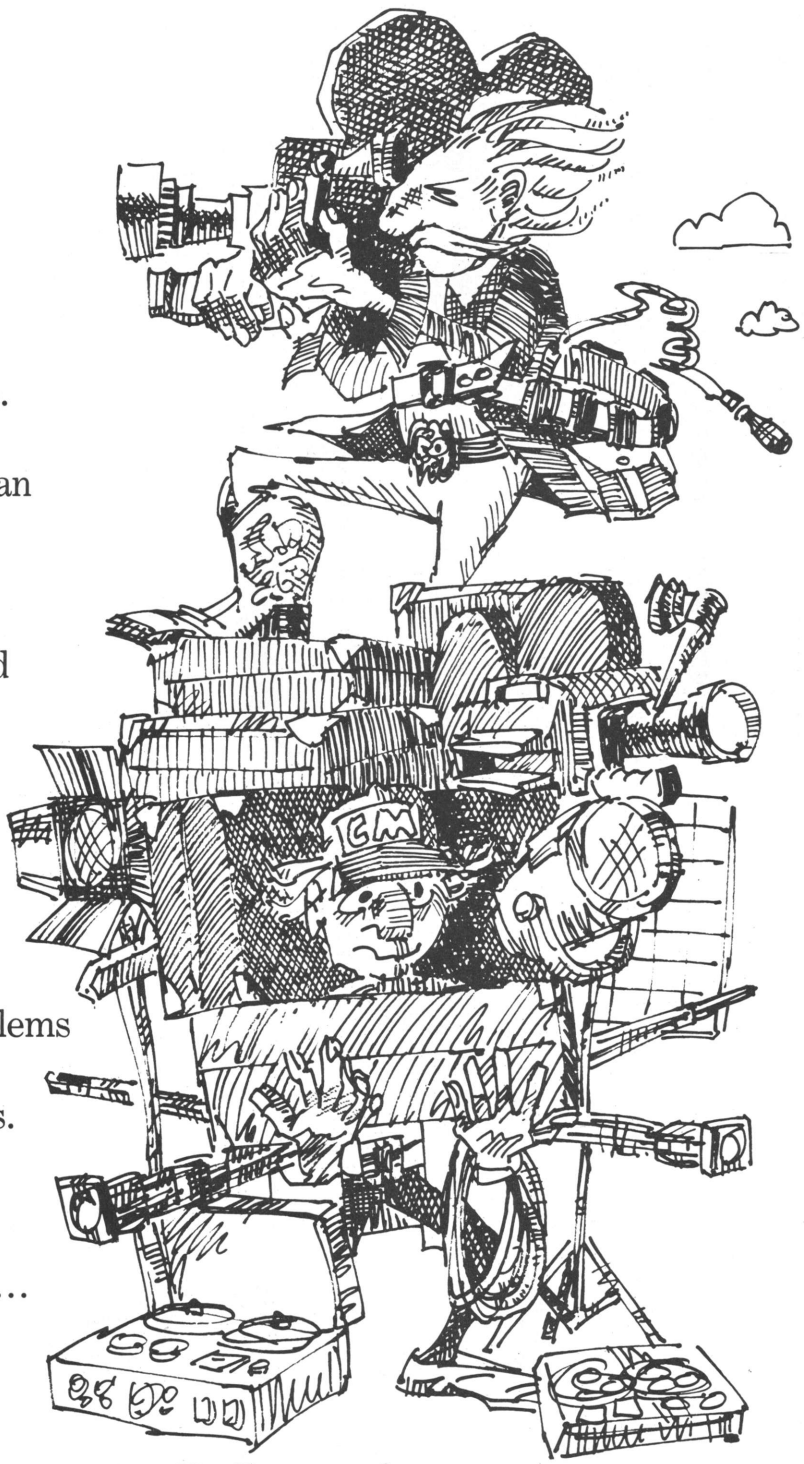
"We're more than hardware."



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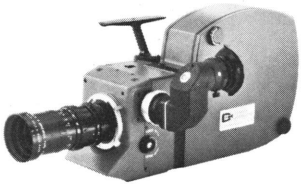

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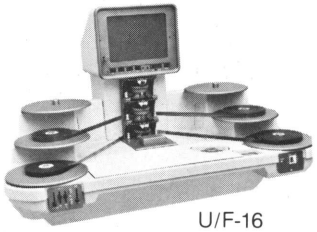

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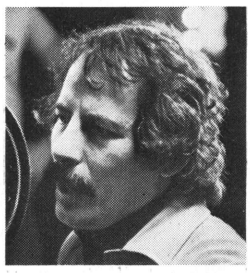

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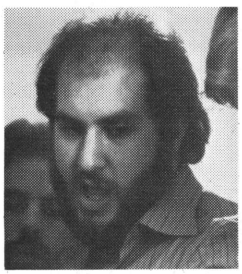
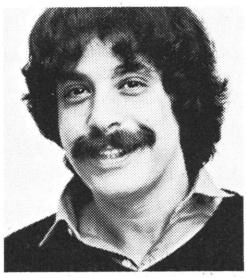


Bill Lustig
Director/Producer "Maniac"



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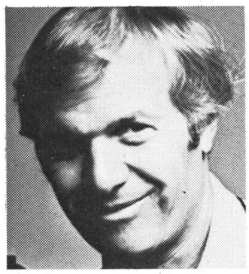

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THE ELECTRONIC CAMERA EXPERIMENT

Video "cut and paste" approach viewed by the author as logical forerunner of what will shortly become a standardized technique

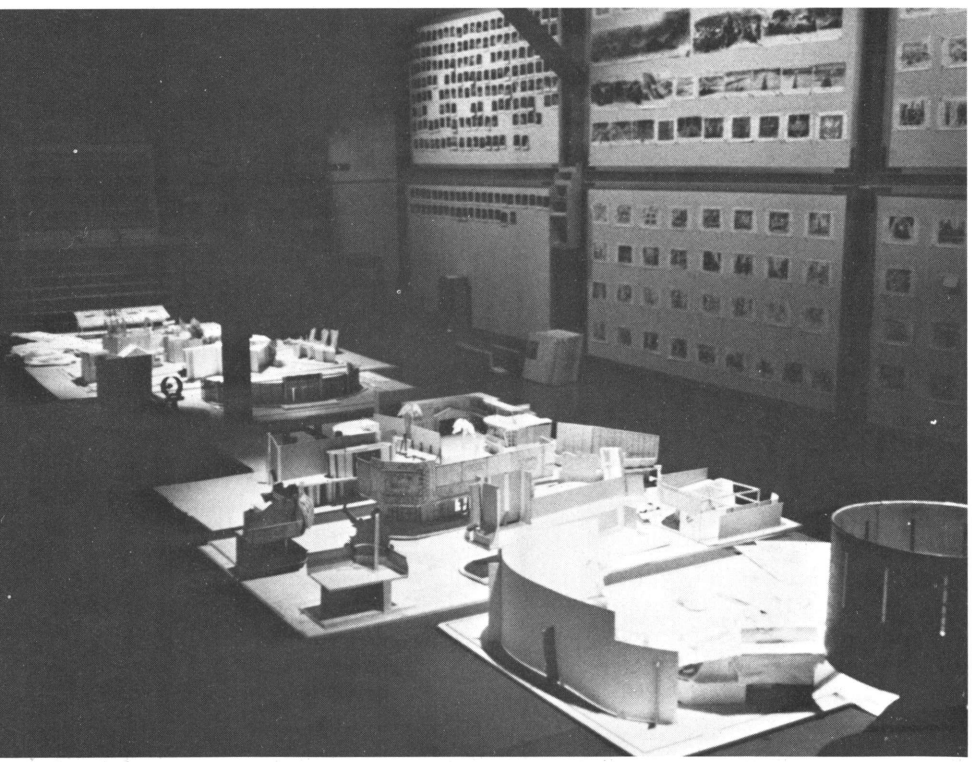
By THOMAS BROWN

Those of us in the motion picture industry are facing a rare opportunity. Within a few short years, in my opinion, high-definition video cameras and recorders with image quality superior to that of 35mm film will eliminate film altogether from the movie-making process. The advent of the digital printer will allow image manipulation and special effects beyond imagination.

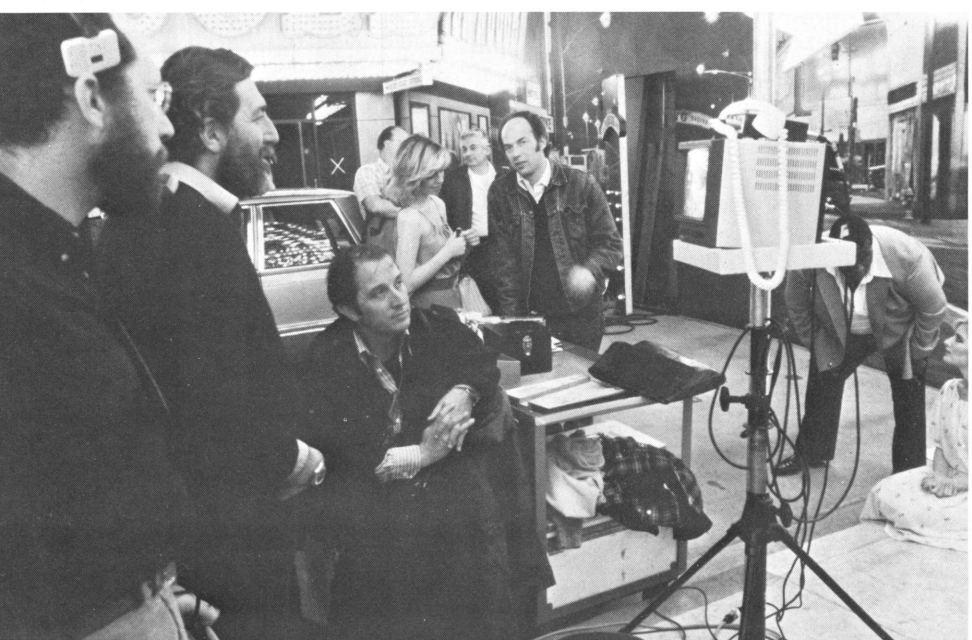
Right now these and other tools for future cinema productions are on the drawing boards. Those of us who are interested will determine what tools are needed and how they will work. The technology assembled for ONE FROM THE HEART was an experiment towards the all-electronic cinema, which will allow production of movies considered impossible today.

Francis Coppola's designs for Zoetrope's electronic cinema are deeply rooted in his career beginnings. As a screenplay writer, faced with the responsibility for a new script nearly every week, he discovered two powerful tools of creativity —the scissors and the stapler. As a director, he realized that the same "cut and paste" process could be applied to the making of an entire motion picture. The tools we are now developing are the electronic equivalent of the scissors and stapler.

In November, 1979, Coppola bought the old Hollywood General Studios and rechristened it Zoetrope Studios. Its compact size and "time warp" atmosphere made it the ideal location to pioneer his ideas for a modern studio, a place where artists and craftsmen would work with the latest tools on projects of integrity. As we toured the lot on my first day of work (June, 1980) Francis spoke of his desire to electronically link each department with the nine sound stages and have the ability to pump images, sound and data around like "hot and cold water." His plans were extensive, the money uncertain and the schedule nearly impossible (ONE FROM THE HEART was to begin production in six months). In the face of these seemingly insurmountable difficulties I knew one thing for sure: putting this project together was going to be fun.



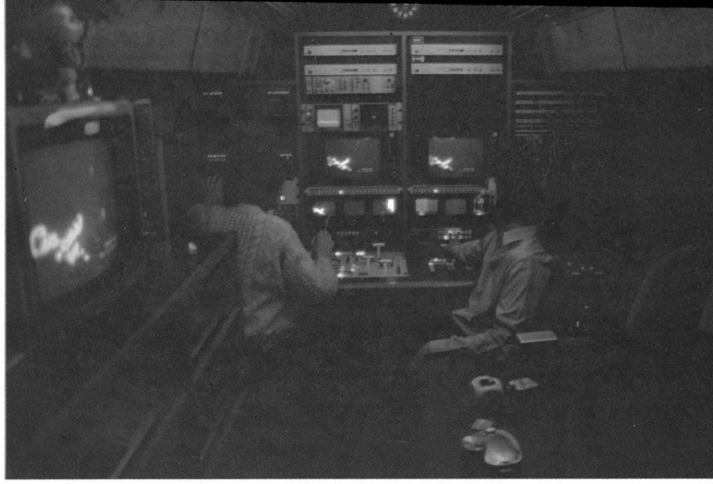
In the "War Room" set up at Zoetrope Studios for the production of Coppola's ONE FROM THE HEART storyboards covered the walls and elaborate models of the sets were stretched out on long felt-covered tables. (BELOW) On the set cinematographer Vittorio Storaro and crew members watch playback of scene rehearsed on video tape.



EARLY PREPARATIONS

Four years ago during the post-production of APOCALYPSE NOW, a small off-line video editing system was built to Coppola's specifications which enabled him to sketch on tape the sequences that were later to be edited on film. From this successful experiment he decided his next production would integrate electronics and video into the whole movie-making process.

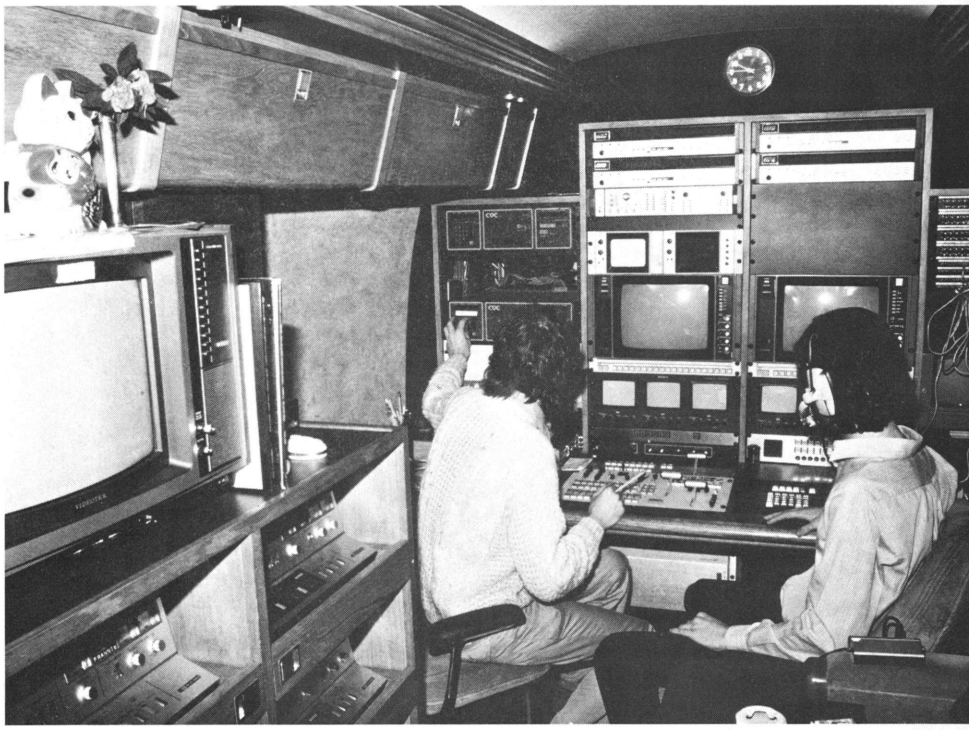
Prior to my joining Zoetrope, Francis held a series of design meetings in San Francico with Tony St. John, Steve Calou (both of whom were responsible for the APOCALYPSE NOW video editing system) and Clark Higgins (presently assisting in the design of George Lucas' system). Together they identified the technical requirements for ONE FROM THE HEART. Several of the key pieces of



(LEFT) Coppola and his pride and joy, the custom-designed 28-foot motor vehicle which served as his Image and Sound Control Center. (RIGHT) At work inside the vehicle. (BELOW) Built by Airstream, the vehicle was equipped by Centro with a complete off-line cinema video editing system comprised of a modified Convergence 103C Editor connected to four Sony SLO 383 Betamax recorders. Control Video Corporation "Intelligent Controllers" handled all time-code functions. The vehicle also contains full kitchen facilities with expresso machine, sleeping accommodations and a bathroom with Jacuzzi.

equipment were so new that only prototypes were available.

When, in October, 1980, the center of our operation shifted from San Francisco to Hollywood, Clark and Steve chose to stay up north, and our team grew to include Chief Systems Engineer Murdo Laird, Image Engineer Dan Lutz, and Operations Manager Michael Lehmann.



THE ELECTRONIC STORYBOARD:

ONE FROM THE HEART's use of electronic technology began with the writing of the script which was keyed into a "word processor." Changes could easily be made, and obtaining the latest version of the script became a matter of pushing the "print" button.

Soon the script developed into an audio/visual script or "electronic storyboard." This was the armature on which we were to build or compose the movie. Indeed, the electronic storyboard became a clothesline on which information could be clipped and sent to a department which would remove it, contribute to it and send it on to the next department. In essence, this process continued until the result was the finished movie. "Previsualization," the initial phase of electronic storyboarding, began when sound designer Richard Beggs recorded the actors' read-through of the script and combined it with temporary music and sound effects to create a "radio play." The action then moved to a large room affectionately dubbed the "War Room." It was here that Coppola met with production designer Dean Tavoularis and designer of photography Vittorio Storaro to discuss strategy for the complex production. Storyboards covered the walls and elaborate models of the sets were stretched out on long, felt-covered tables.

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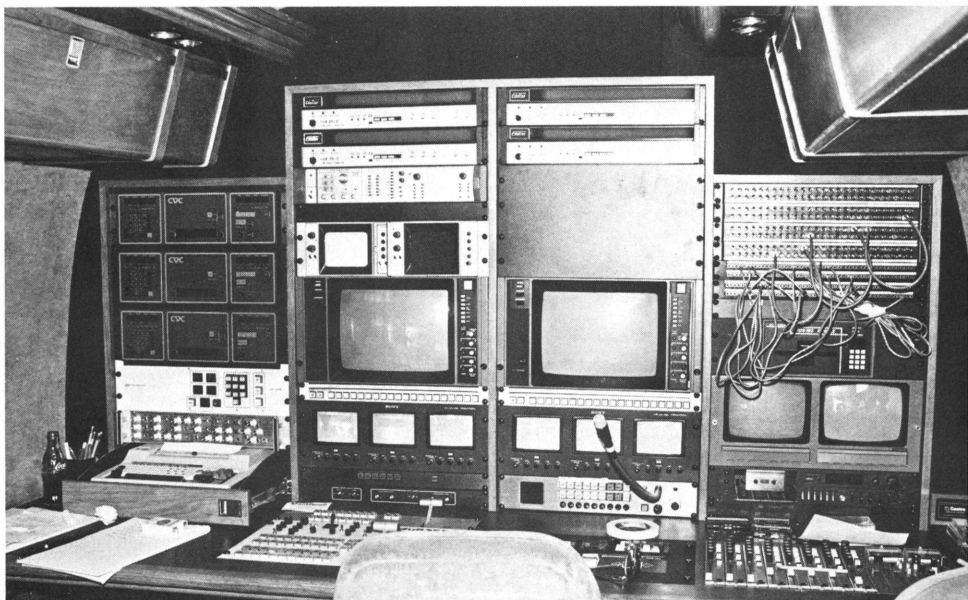


SPECIAL VISUAL EFFECTS FOR "ONE FROM THE HEART"

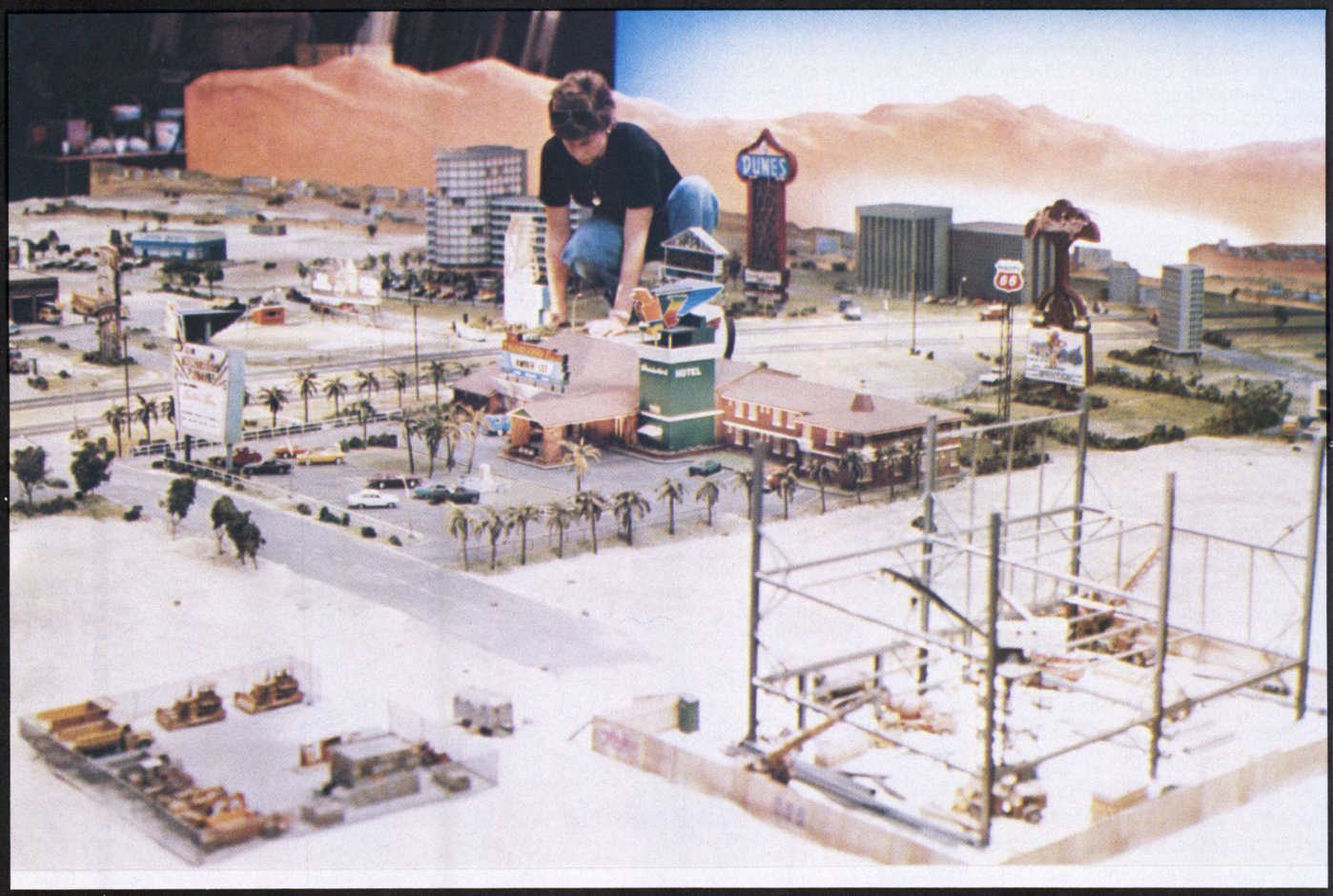
By RAYMOND FIELDING

An explanation of the rationale behind the effects used in this film and details of how they were set up and photographed in the studio

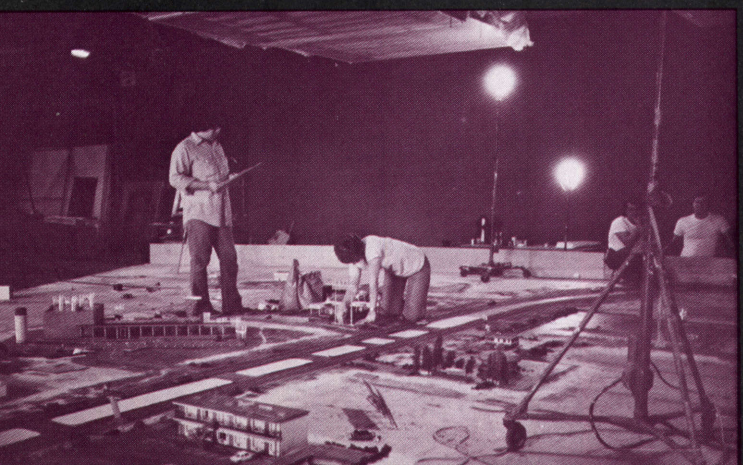
From the beginning of planning on ONE FROM THE HEART, Francis Coppola intended that extensive special visual effects sequences would be incorporated into it. On the one hand, the use of such techniques was central to his plans for a modern, state-of-the-art studio in which reality would be re-created and location shooting kept to a minimum. In addition, Coppola felt that special visual effects would help to give this particular film the "look" which he required—not unreal, but not quite real either—a look that was impressionistic and sometimes even surreal.

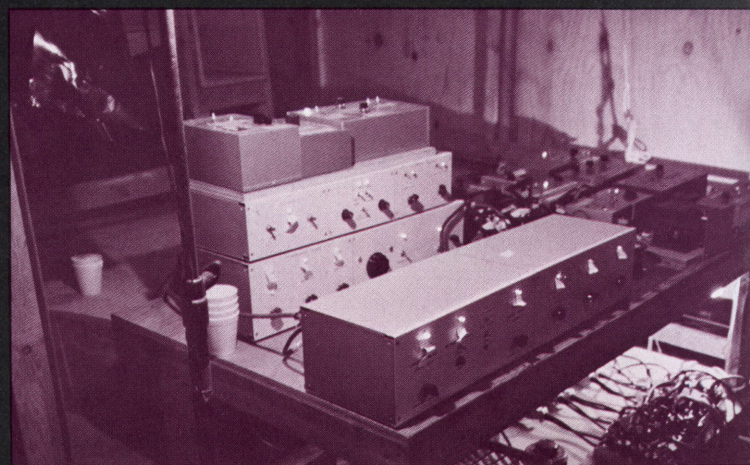
Coppola's dramatic premise located his romantic characters in a magic city in the middle of the desert. The choice of Las Vegas was obvious from both a geographical and design point of view, its well-known garish, psychedelic neon signs providing a fairyland background for the romantic adventures of the characters.

Obviously, it would have been possible



(ABOVE:) Miniatures builder Sharon Lee assembles a section of the Las Vegas set. (BELOW LEFT) Construction progresses on the city-wide Las Vegas miniatures. Standing at left is Miniatures Supervisor Greg Jein. (RIGHT) Some of the electronic controls for the simulated neon billboards and signs in the miniature set. Most of the miniature signs incorporated elaborate, separately controlled lights, the individual bulbs of which were as small or smaller than so-called "grain of wheat" bulbs.





to send a second unit crew to Las Vegas to shoot extensive background plates which could be integrated into sound stage action back at the studio. And, indeed, some background footage was shot there, for both reference and production purposes.

For the most part, however, Coppola required background detail which impressionistically suggested and sometimes distorted familiar architectural aspects of the city. This required the creation and photography of a city in miniature. Some of these miniatures would be photographed directly for an introductory sequence in which the camera descends from the heavens into the California desert, swoops across the sands, approaches and passes through the strip section of Las Vegas and down into the streets of the city for the opening of the first live action dialogue sequence.

A second miniature set was required to provide detail behind the performers when they were photographed in automobiles. There were several such sequences in the script, involving long stretches of dialogue between performers driving down the desert highway from one location to another. The footage of such miniature background detail would be integrated later with foreground scenes of the actors in both open and closed automobiles, by means of rear projection.

Design of the miniature city and its components was supervised by production designer Dean Tavoularis, who also created the astonishing full-scale sets for

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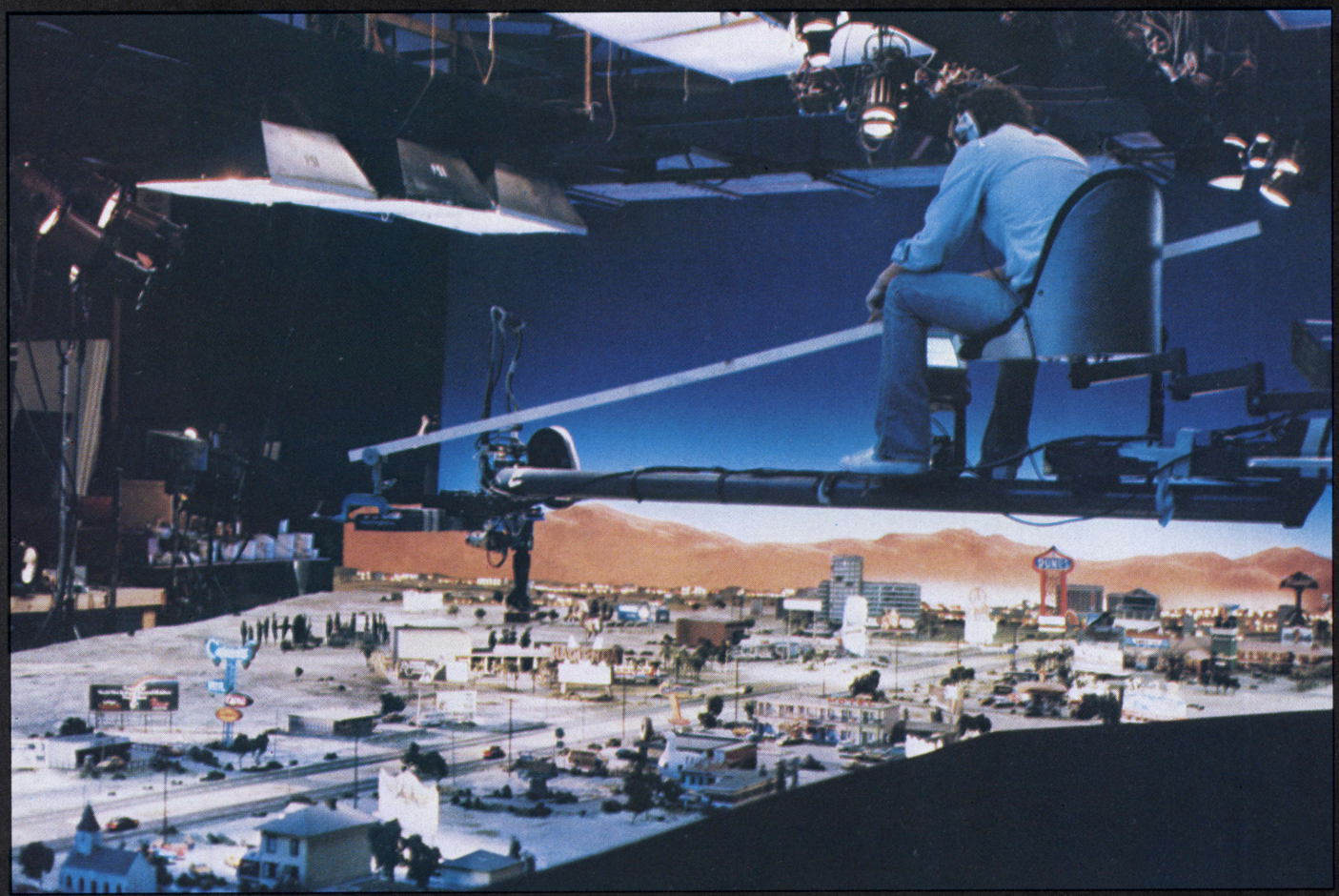
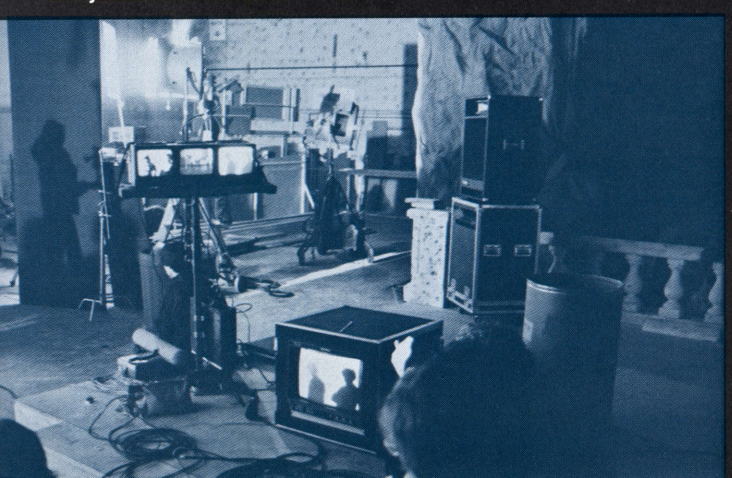


(ABOVE:) At the end of a Zeus crane, an Arriflex camera points straight down on the Las Vegas set. A "pitching lens" assembly at the end of the optical system redirects the field of view horizontally along the line of the set, producing an equivalent height above the pavement of about six feet. (BELOW LEFT) Video monitors scattered throughout the stage allow technicians to see the scene being photographed. (RIGHT) Francis Coppola views an early assembly of sketches and test footage in the "War Room." Pinned on the walls are some of the hundreds of storyboard sketches for the film.



VISUAL EFFECTS AS A CINEMATIC ART FORM

By WALLY GENTLEMAN, BSC, CSC, FRPS, FBKS

The form and function of special visual effects as they add to the artistry and credibility of the cinematic illusion in Coppola's film

Visual effects as a cinematographic art form is, for the most part, a labour intensive exercise. As such it is readily receptive to computer application. First recognised in cartoon film production as a means to reduce the tedious preparatory calculation and time-consuming operation of the cell animation camera stand, the computer has now been called upon to control the many operations of the optical printer. In post production design application, where most operations require some degree of repeated mechanical moves to an absolute tolerance, this copy mechanism remains at the core of formative visual effects enterprise.

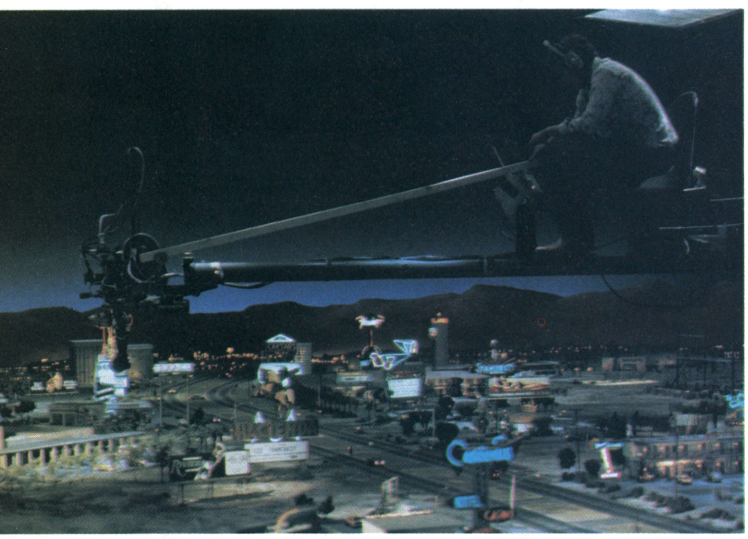
Under special circumstances of model cinematography where credibly exotic effects are required, the computer has essayed into the regular motion picture stage operation. It commands the many movements required in a serviceable motion repeat system, both in real time and stop-frame cinematographic continuums. It is, then, not surprising to find the ubiquitous computer moving into yet another labour intensive arena, that of film editing, to present some stunning advantages. At this time, the computer is now making its debut in the planning world of the art department where its use will eliminate weeks of draughting time.

In any well prepared pre-production of a motion picture the computer has already been at work within the research library where requisite data appertaining to costume design, modes of vehicular travel, style of speech, locational environment, period architecture, furnishings and the like is filed into the computer memory for later access and retrieval by production personnel.

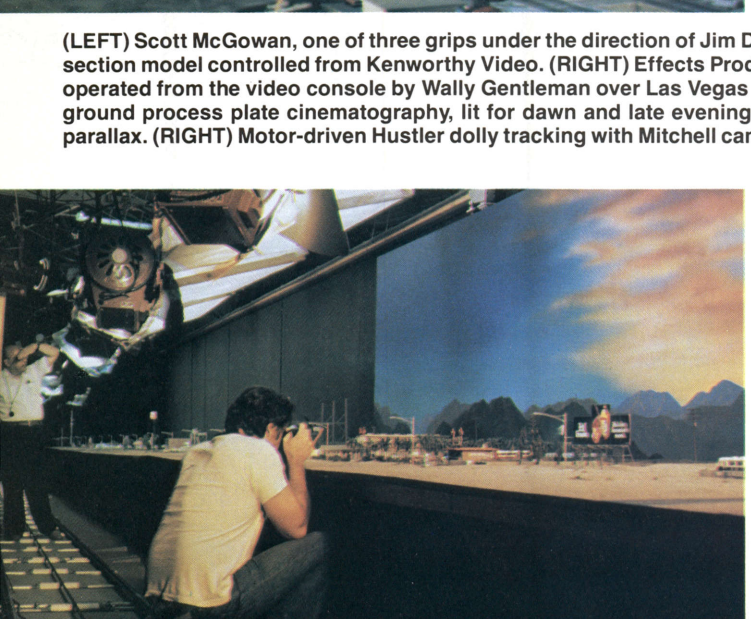
Similarly, the final shooting script can be programmed for costing purposes. It can then be rapidly organized for a viable production shooting schedule that is open to fast modification in the face of any production emergencies, the implications of change being clearly observable. Clearly the beneficial aspects of the computer revolution are being felt and utilized in the film industry.

The speed of the onset can be judged by the fact that art department planning for ONE FROM THE HEART began conventionally one year ago and computer technology has rendered the methodology obsolete.

Traditionally the art director would render a setting into which the director would place his actors. This drawing would be of a suitable size and dimension and of selected aspect ratio. It would be of such color and tone as to support the emotional intent of the scene to be played for camera record. The draughtsmen of the art de-



(LEFT) Scott McGowan, one of three grips under the direction of Jim Dunn, operating the Continental Camera pitching lens over a Las Vegas section model controlled from Kenworthy Video. (RIGHT) Effects Production Manager Mark Monette spots the action, as the Louma Crane is operated from the video console by Wally Gentleman over Las Vegas approach shot. (BELOW LEFT) One-hundred-foot model run for background process plate cinematography, lit for dawn and late evening effect. The background travels with the camera to eliminate horizon parallax. (RIGHT) Motor-driven Hustler dolly tracking with Mitchell camera equipped with Samuelson prism for ultra-low angle viewpoint on.



partment would then develop the perspective lines of the drawing on the draughting table, determine camera lens selection, establish scale and make set construction drawings. From these subsequent plans and elevations a cardboard model of the proposed set would be made in such proportion as to permit easy viewing of its component parts through a camera viewfinder. Preliminary blocking of subject action within the set could then be formulated. Continuity sketches provided with reference to prospective camera positions and movements thus could be accurately determined in consultation with the film director.

The use of a computerized image generation system can now provide an artist with a console. Using various keyboard, control-key functions and light pen applications in place of traditional pencil and paper, the creation of a drawing is delineated on a TV monitor. From this master reference the computer will determine how the set will appear from any desired position of the intended camera choreography and present a hard copy read-out of the result.

Excellent visual effects are sometimes the result of a happy accident encountered while embarked on a course of deliberate intent but, more often, they are the result of intense application and planning for which there is no substitute. The effects director, then, is interested in the creation of continuity sketches that demonstrate compositional and mood intent within the frame aspect ratio in sciagraphic and color terms and, also, the compositional image flow in the linear terms of time and space, as represented in the physical movement of the motion picture camera. The perception of any one individual is not necessarily identical with that of another viewer. It is only through the provision of a common object, in this case, a two dimensional drawing, that suggestion and correction can lead to a reasonable unanimity of purpose.

There are film directors who feel that detailed planning is a restrictive exercise. There is no reason why this should be so. Ordered thinking does not need to be stereotyped deliberation and is no restriction to flexibility of intent. In the same way that the fabrication of a mechanical device or an architectural building requires initial design drafting, or a compositional layout of a painting needs to be made before detailing can proceed, then the art and business of motion pictures requires similar planning.

The finished shooting script, after review of the art director, is passed into the hands of sketch artists who are required to work closely with the film director who should advise whether a subject can be conceived as from a high or low angle, close or wide shot, zoom or static position according to what emotional impact is expected from any particular scene. A preview of such sketches in linear time compositional form can be greatly assisted by video recording continuity sketches shot in sequence and applied with standard transitional effects, such as dissolves to a guide track of sound, derived from readings by the artistes of the script dialogue and/or music tracks.

Planning for ONE FROM THE HEART proceeded from such a source, which permitted a basic preview of the movie to be made. A sophisticated preview in video allowed judgments to be made on pacing and timing of scenes in addition to pictorial compositions. Additionally, scenes could be withdrawn, retained on floppy disk recording devices, and, retrieved at will for any resubstitution following a reverse of decision.

As physical rehearsals of actors began as technical rehearsal adventures in areas that ranged from empty stages through partly built sets, to Las Vegas locations to completed stage sets, selected video scenes were integrated into the master tape that had previously borne the

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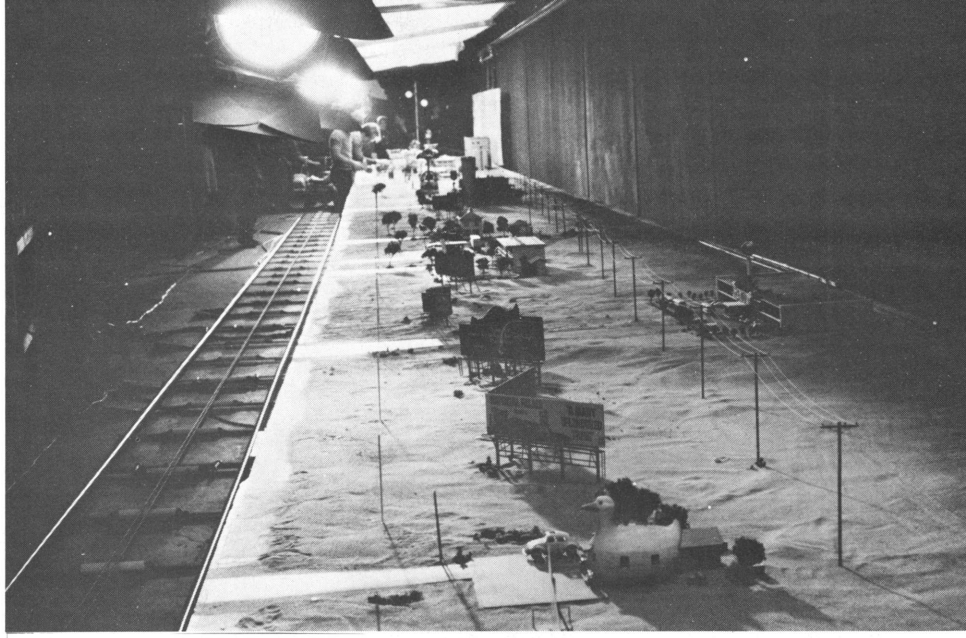

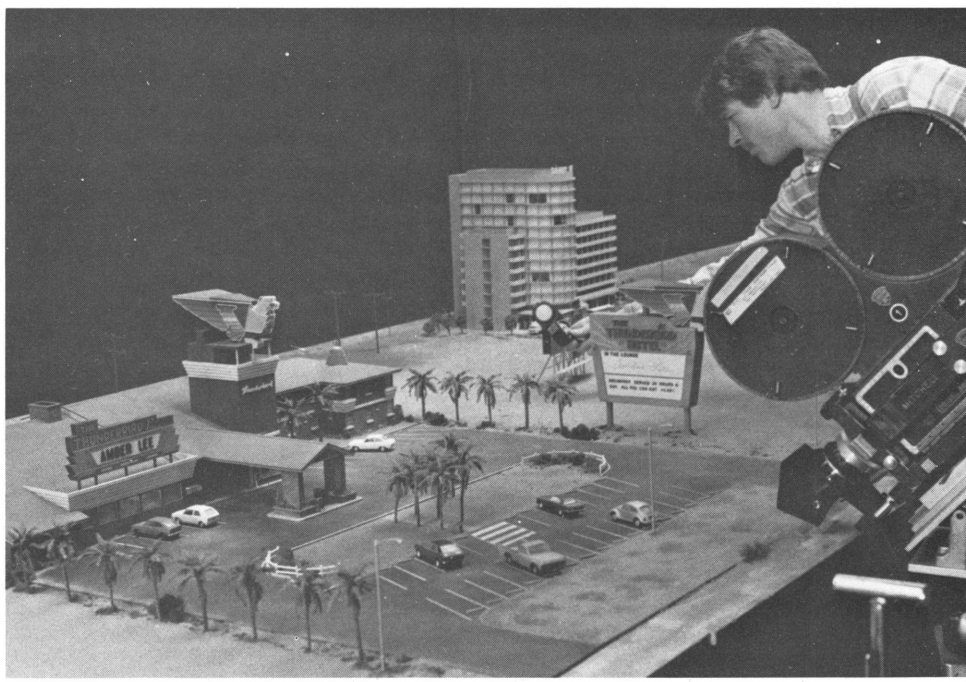

The lengthy model, built by Greg Jein and his crew, was lighted by multiple 10Ks in order to permit a lens stop of f/16, which was necessary to achieve the requisite depth of field. (BELOW) Operating cameraman Karl Herrmann takes a light reading on one segment of the model.

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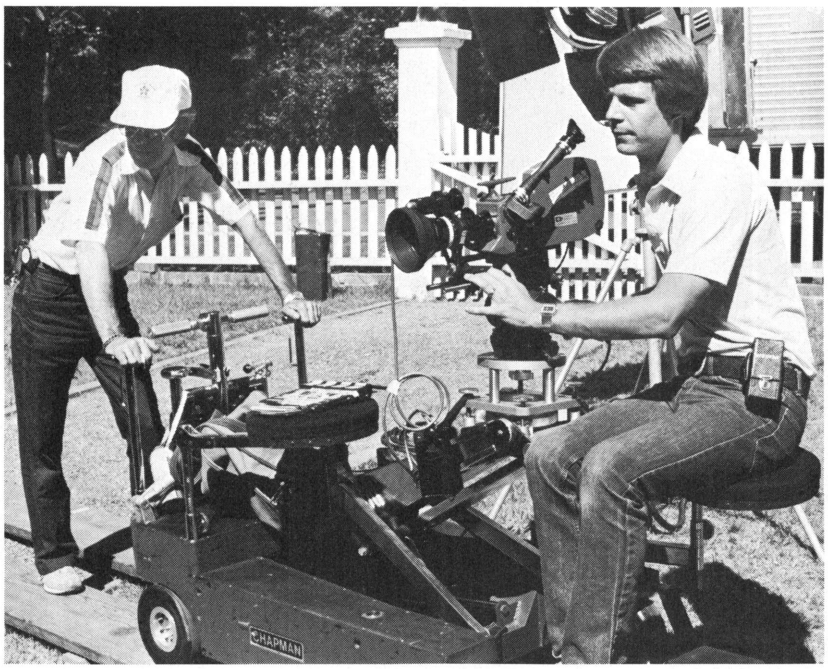
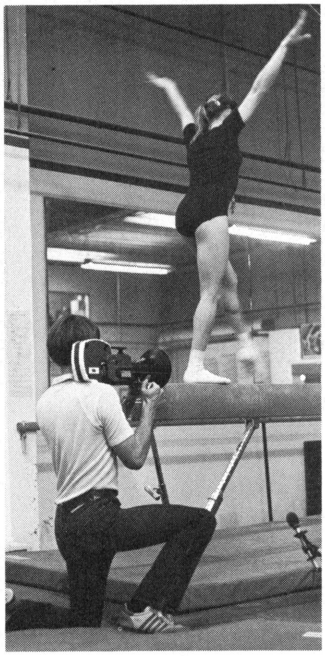


"It's been more than a year since I bought my GSMO from Adolph Gasser, Inc., complete with 3 quick-change 400′ coaxial magazines, orientable viewfinder with 7″ extender, 5 plug-in batteries, Angenieux 9.5–57mm zoom lens, etc.

"Compared with any other competitive 16mm camera package on the market, I saved at least $10,000!" says Randy Love, the San Francisco-based cinematographer whose recent credits include sports coverage for ABC-TV's *Wide World of Sports*, commercials for KGO-TV, and the cinematography on *"The Hidden Struggle"*—Dawn Flight Productions' documentary film about mentally retarded adults.



"But money was not my prime consideration. Feature for feature, compared with the Eclair ACL II, the Aaton 7 LTR and the Arri 16SR, I found that GSMO was *the best buy* for 16mm production as well as documentary applications.

Image Registration

"Before I bought my GSMO, I checked it out thoroughly, shooting a number of registration tests. The image registration was just as good as *any* of the competition. As good as you can get in a 16mm camera! In fact, the 16mm negative of *"The Hidden Struggle"* was blown up to 35mm with outstanding results.

Soundstage Quiet

"Quiet enough for soundstage filming, my GSMO checks in at 28 dB! It is so quiet, my soundman frequently checks the green indicator light on the side of the camera to make sure that it's running!

Weight and Configuration

"The GSMO's excellent balance, low configuration, and ultra light weight (approximately 12 pounds fully loaded, including lens) are essential for the type of shooting that I do: a lot of handheld shooting and shooting from the hip—'floating' the camera Steadicam-style, so to speak! When you shoot 15 magazines per day, every pound you shave off the camera weight makes an enormous difference.

Variable Speeds

"The high-speed capability comes in handy for special effects, commercials and documentaries. 64 fps is a very good slow-motion rate. Probably as good as one can possibly expect from a camera as quiet as the GSMO. At the mere flick of a switch, you get variable speeds from 12 fps to 64 fps—including 24 *and* 25 fps sync sound speeds, so I can shoot for European TV without having to rent another camera!

System Interchangeability

"GSMO batteries, optional accessories and lenses are interchangeable with the CP-16R. So that I can easily rent a CP-16R body with a couple of mags whenever I need a backup camera, further enhancing my 16mm production and documentary capabilities.

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"Even the most rugged camera needs service periodically. Cinema Products' well deserved reputation for responsiveness and outstanding factory backup—as well as an extensive GSMO dealer/service network all over the country—means quick turnaround. In my experience, sometimes as quick as 24 hours! For a freelance cameraman like myself this is of critical importance."

Shooting from the hip, Randy Love "floats" his GSMO Steadicam-style.

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The CH15S is actually more directional than a mini shotgun mike – in a package that's only 4 inches long that weighs less than 6 oz. Specially designed for boom and fishpole use in TV and motion picture studios, but equally at home wherever working space is small and you have need for a compact, highly directional microphone.

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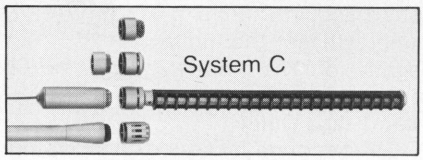

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OF MINIATURES, MATTES AND MAGIC

By ROBERT SWARTHE

Crew hired to work last-minute special effects miracles on "OFTH" launches all-out, down-to-the-wire effort to meet release deadlines

In July 1981, Francis Coppola hired me to take over supervision of all special visual effects on ONE FROM THE HEART. My previous work in this field included supervision of animation effects on CLOSE ENCOUNTERS OF THE THIRD KIND ("CE3K") and STAR TREK-THE MOTION PICTURE ("Star Trek-TMP"). I was overall visual effects supervisor for "CE3K-Special Edition." "OFTH" gave me the opportunity to create visual effects of a different kind—no spaceships, stars or aliens.

Both the production design and photographic style of the film are impressive and unique. Francis wanted it to have a theatrical look, as if Las Vegas had been re-created on sound stages. I decided to adapt existing miniatures to a style of presentation which would complement that look, rather than try to be representational. With little time left to complete the film, I had to come up with ideas which could be done in a hurry, and staff a new visual effects group to accomplish the work.

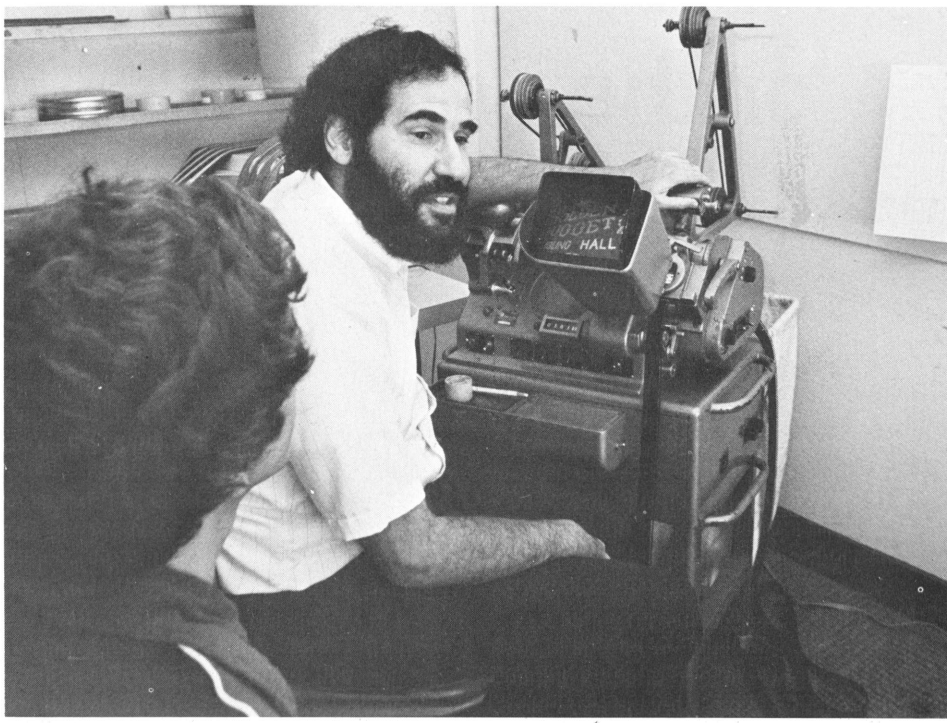
First I brought in Kathryn Campbell. Her talents as a visual effects editor on "Star Trek-TMP" and "CE3K-Special Edition", plus her strong background in standard film production, were essential to the successful completion of those effects. This type of editing is very complex because each scene is made up of a large number of film segments—each dependent on the others and shot on different cameras. Very few people are good at visualizing how the pieces fit together and getting them through optical compositing. Kathryn is an expert.

Next to join us as Director of Miniature Photography was Robert Eberlein. I knew that we would need to photograph more than just miniatures, but I did not know exactly what. During his career, Bob has been intrigued with solving a wide range of photographic problems in features and television. We had worked together on a number of such projects so I knew he was perfect for this.

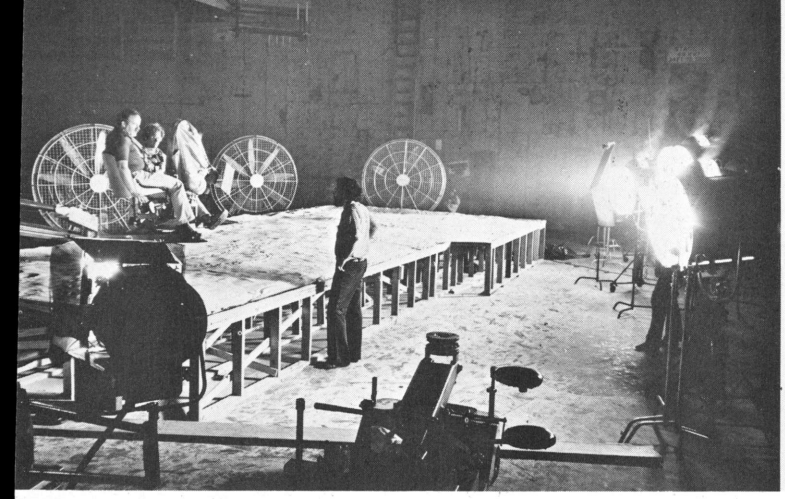
We set up our offices on the Zoetrope Studios lot in Hollywood. Conveniently across the way was Miniature Supervisor Gregory Jein and some of his remaining staff, including Sharon Lee, Nick Seldon, Nora Lee and Rick Zarro. They had been on the show for nearly a year and now were being asked to restore and recondition some of the miniatures which were beginning to show their age.

We then took over Stage 2 and split it into two sections: one for miniature photography and the other for live-action inserts or whatever else might come up. The miniature area was curtained off with black duvetine. Later we also used Stage 1 for shooting blowing sand effects.

The next element in the plan was the choice of photographic technique. The camera movements required the same kind of motion control camera system commonly used to photograph spaceships for STAR WARS, CE3K," etc. My only choice for the job was a new company specializing in visual effects photography: Dream Quest, Inc. The system they designed, built and operate is com-



(ABOVE RIGHT) Seated at the Moviola, Special Visual Effects Supervisor Bob Swarthe discusses film test of Golden Nugget sign with Hoyt Yeatman. (BELOW LEFT) Visual Effects Editor Kathryn Campbell checking one of many film elements used to composite *"Little Boy Blue"* sequence. (RIGHT) Effects Director of Photography Bob Eberlein and gaffer Foster Denker study wedged exposure tests of the miniatures.



(LEFT) Eberlein and Assistant Cameraman Bruce McGregor (on crane) confer with Bob Swarthe (center) about filming of extensive miniature desertscape. Note the four huge Ritter fans set up to blow sand, and the six Titan arcs for shooting 48 fps at f/22. (RIGHT) In the opening sequence, the camera looks down and dollies across the desert, following a man's and woman's footprints. Here Nick Seldon and Nora Lee freshen up the miniature footprints for another take.

pletely state-of-the-art. Each of the firm's close-knit partners are expert in the marriage of electronics and motion picture photography: Scott Squires in computer software and photography; Hoyt Yeatman in miniature, optical and matte photography; Tom Hollister in mechanical design; Fred Iguchi in computer hardware and Rocco Gioffre as matte artist.

Two sequences in the film depend entirely on visual effects: An opening sequence which introduces the visual style of the film in miniature and a live action musical section, "Little Boy Blue." Scattered throughout the film are a number of other effects scenes and matte paintings.

Before I started working on the film, attempts had been made to film an opening shot of a large Las Vegas table-top miniature. Even though it nearly filled the sound stage, it was not convincing enough to pass as realistic. However, everyone who looked at the tiny buildings and signs at close range was impressed by the intricate combinations of colored neon and thousands of animated incandescent lights. This gave me the idea to design an introductory sequence to show them off for what they really are—beautiful MINIATURES. I selected the best individual pieces and had them mounted separately on shiny black formica to reflect the lights. Six of them have Las Vegas hotel marquees upon which some of the opening credit titles are lettered.

We begin at night in the desert outside Las Vegas. Gusts of sand blow through the frame. A melancholy love song, *"Empty Pockets,"* is heard as the camera moves past a billboard with "Las Vegas, Nevada" glowing in miniature incandescent lights. The singing voices of Tom Waits and Crystal Gayle alternate as the camera skims lower to reveal male and female footprint impressions gradually fading back into the sand. Eventually, the wind blows sand away from the feet of the Dunes Hotel "Genie" to reveal his reflection in the shiny black floor. The wind stops and the camera swoops down and around one miniature Las Vegas marquee after another. The sequence culminates with a 230° move around and through the middle of the MINIATURE "Golden Nugget" sign and down onto the huge LIVE ACTION Fremont Street set with hundreds of extras, flashing lights, cars, etc.

MOTION CONTROL PHOTOGRAPHY

Dream Quest transported their motion control system from their Culver City facility and set it up on Stage 2. The most unusual problem they had to solve was how to maneuver the camera freely and closely around small objects with the lens usually less than eight inches away. They used the 16-inch-long Preston Snorkel with a 20mm focal length lens. This allowed them to bring the lens over the table top but keep the camera itself out of the way.

The camera had to make large movements toward and away (called TRACK) from side to side (EAST/WEST) and up and down (NORTH/SOUTH). It sounds paradoxical, but it is necessary to swing the camera around in large movements to keep the lens at the end of the snorkel in close. Scott Squires created special computer software to make smooth offset camera moves. Planning each move was quite painstaking. After moving the camera around to find key positions, the move was computed and black and white move tests shot. After studying and approving them on a Moviola, Bob Eberlein and his crew came in to light the miniature.

EBERLEIN

Due to the inevitable delays in the selection and design of title credits that appear on each marquee, we decided to program and shoot black and white move tests on all of them, then come back later and go for the final shot. The motion control computer stores each camera move

Continued on Page 49

Dream Quest, Inc. transported their motion control system from their Culver City facility and set it up on Stage 2 at Zoetrope Studios. Here Hoyt Yeatman studies a computer print-out of a complex move. After moving the camera around to find key positions, the move was computed and black and white move tests were shot.

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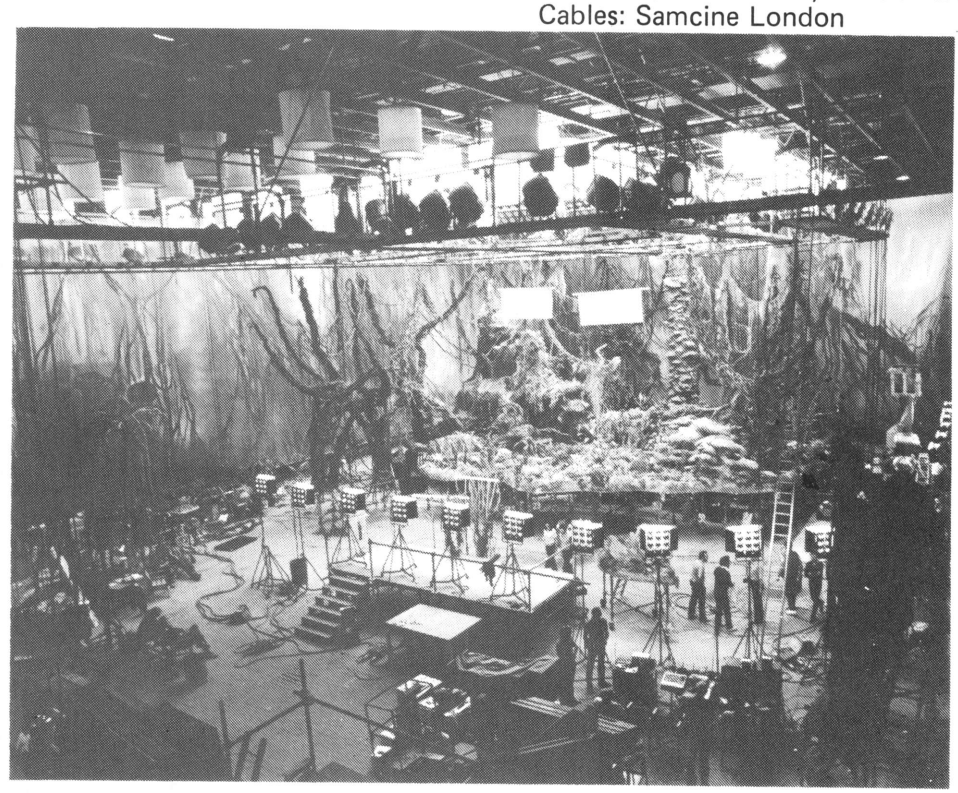

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Most of it had to be cabled to operate either from the studios' own d.c. supply or from a.c. when dimming facilities were required, and when the studio supply was insufficient. Up to seven 1000 amp d.c. generators had to be on hand to provide additional power. When a.c. was needed two 100 kW alternators had to be there.

After photographing THE GREAT MUPPET CAPER (which was almost as large in terms of lighting requirements and which Samuelsons also serviced) Ossie says DARK CRYSTAL will be his last picture. If it is, all at Samuelson's wish him, and Lee, very, very many years of health and happiness in retirement.

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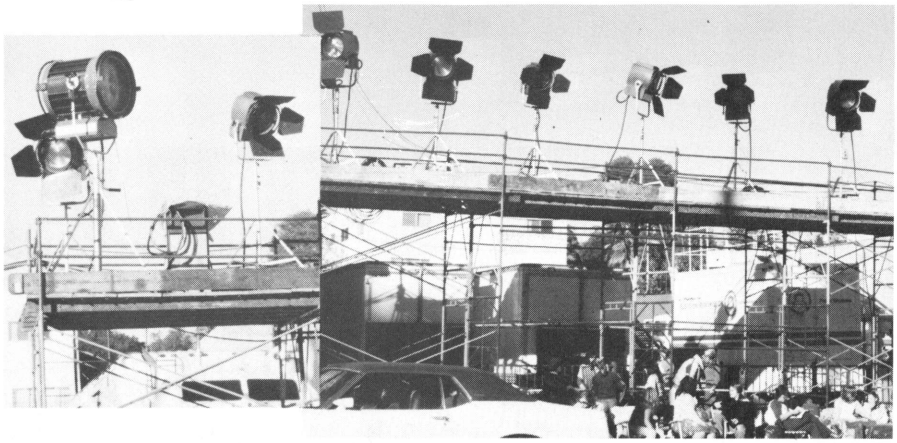

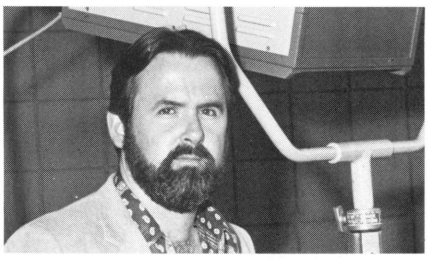

Edward D. Carlin (Ed to his many friends) started in film and TV productions as a freelance electrician in 1963 and subsequently became a gaffer, doing among many other films, "King Kong," "Who'll Stop the Rain" and "Fury." He eventually started a motion picture equipment rental business, with his home garage as warehouse and office. He bought one light and his partner bought one light. It wasn't long until Ed began to get a good feel for the business. He bought out his partner and soon found that he had to devote full time to the enterprise. Today Ed Carlin heads the very successful Keylite equipment rental company, with approximately 35 employees. He owns the sizeable two-story building that houses the company in Burbank, California, and plans a major expansion early in 1982. In 1980 Ed was honored as Man of the Year by the American Society of Lighting Directors.

EDWARD D. CARLIN tells How the Hollywood Christmas Parade is Lit.

"For the past four years we have furnished KTLA with LTM HMI lights exclusively for the Hollywood Christmas Parade," says Ed Carlin, former motion picture gaffer and now owner of Keylite Rental Company, a motion picture and television equipment company.

"In working with Jim Ratcliffe, the lighting director from KTLA, and Hec Heighton, the production manager for KTLA, we were able to try a unique approach to lighting the parade. Until four years ago the parade had been lit with conventional incandescent and arc lights. By using LTM HMI lights we were able to cut down on the use of multiple generators, generator operators, excessive cable and extensive rigging time and man power.

One of the problems with using arc lights is the fact that carbon must be changed every 30 to 40 minutes. With the parade being broadcast live on over 100 stations across the nation and running for 2 hours at night we could not afford the interruptions. Also, when using incandescent lights such as maxibrute par lights you cannot get an even light, leaving dark areas to contend with.

With the use of LTM HMI lights we are able to get an even 100 F.C. the entire length of the parade area being shot. Four years ago we shot in front of Mann's Theatre on Hollywood Blvd. and used 38 units. The last three years we have shot in front of KTLA Studios on Sunset Blvd. and have expanded the area to approximately 1,000 feet, using 8 cameras. In order to cover this area with the desired foot candle reading we have increased the number of units to 75, mainly 4000W units, including the 575W and 1200W units in the booth.

With the increased demand for light, we were able to use the new 6K LTM unit with beautiful results. The 6K was used as a key light in front of the booth that extended out into the parade route, an area that we have had trouble lighting in the past. The 6K provided so much light that we tipped the head up, utilizing the bottom of the ring for our foreground, and we were able to light the building in the background over 800 feet away. I feel the 6K gives every bit as much light output as a brute arc.

We have used LTM units exclusively for many reasons; the wide range of lights from fiber optics to the new 6K unit, the interchangeability of feeder cable and extensions, and the durability of the units to hold up under a rental environment."

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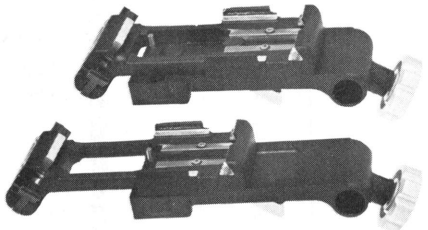
First, it has a unique camera mounting plate which can be attached to your camera in one of eight different positions. This is used to balance your camera on the head, greatly improving the head's performance.

Besides an adjustable camera mounting plate, the entire platform (with camera atop) can be shifted

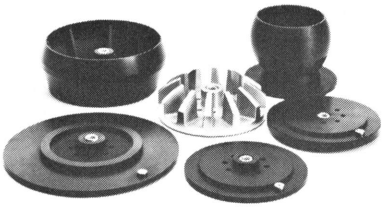


back and forth on the head so that you can find the precise center of gravity for whatever particular gear you're using at any given moment, such as heavy lenses, large magazines, etc.

It takes only a second to release your entire camera with O'Connor's new quick release option. To prevent accidental releases, it has a built-in safety feature.

WITH BASES, WE'RE LOADED.

The Model 50 can be ordered with one of six bases. Besides two Pro Jr. types, Mitchell, Arri 16 and Arri 35, we also offer the O'Connor Claw Ball Base with the "ultra positive grip." The distinctive aluminum ridges

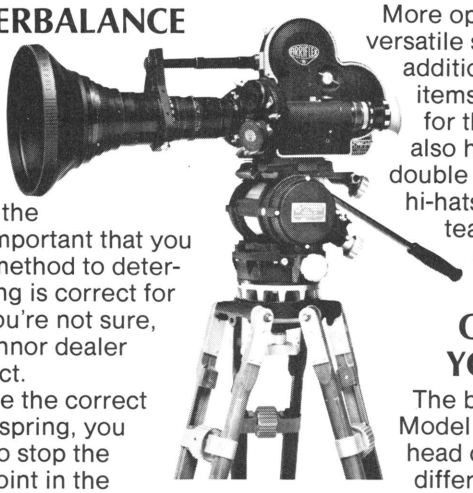


dramatically increase the holding power with far less effort needed to secure it in position. This Claw Ball design can also be adjusted ±15° to the horizontal plane within the top casting of the tripod to correct or alter your panning plane.

O'CONNOR COUNTERBALANCE DEFIES GRAVITY.

Three counterbalance spring options are available for the Model 50. It is important that you use the proper method to determine which spring is correct for your needs. If you're not sure, consult an O'Connor dealer or talk to us direct.

When you have the correct counterbalance spring, you should be able to stop the camera at any point in the normal tilting range and release the handle without the camera moving. And it should take no more effort to tilt it upward than it does to tilt it downward. We specifically design counterbalance into all our heads to correct this natural act of gravity so that your "tilts" are as steady as your "pans."



MORE CONTROLS FOR MORE CONTROL.

Like all O'Connor heads, the Model 50 is designed to provide maximum versatility. Separate controls for the pan drag, pan lock, tilt drag and tilt lock—all improve the flexibility and repeatability of camera movement.

O'CONNOR HAS MORE OPTIONS.

More options mean a more versatile system for you. In addition to some of the items already mentioned for the Model 50, we also have adjustable double video handles, hi-hats, cases, adapters, teak tripods and the ever amazing Hydro-ped.

ORDER IT YOUR WAY.

The basic O'Connor Model 50 fluid camera head can be ordered 378 different ways. If you're not sure how you want yours, maybe you should send for our brochure and price list to help you pick the equipment that's perfect for your needs.

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Q&A

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This organization's membership is made up of manufacturers and dealers throughout the world. *Direct all Q&As to AMERICAN CINEMATOGRAPHER, P.O. Box 2230, Hollywood, CA 90028.*

Q If a Mitchell 35mm MKII camera is mounted in a helicopter or fixed-wing aircraft for aerial photography, is it possible to close the shutter to 10° and operate the camera at 24 fps to take advantage of the 1/864 second exposure as a means of eliminating vibration, without creating a screen jump between each frame, due to the extra long time of no exposure between frames.

A In aerial photography the shutter should never be closed beyond 90° at 24 fps. Even with this combination, undesirable "stop motion" effects are sometimes obtained. When the action permits, use a filming speed of 32 fps (175° shutter), which will help eliminate most vibration. If the budget allows, consider using one of the many available helicopter mounts or anti-vibration stabilizers available from many sources, on rental, from equipment supply companies. These devices have been engineered specifically to eliminate vibration in aerial photography.

Q I am planning a 35mm b&w film with live-action background with a ghost effect superimposed over all. What is the best black material against which to shoot the ghost image, so that I will get the minimum of exposure? The whole optical job is to be done on an animation stand.

A Black velvet is generally considered the best material for backgrounds for ghost effects. Other suitable materials are velveteen, velour, sprayed black flock, etc. If the subject to be photographed against the black material can be up very light in values and color, an exposure 1/2 to 1 stop under normal will produce very little if any background density.

Q Could you please explain the difference in job functions between a "gaffer" and a "key grip"?

A A "gaffer" is the head electrician on the set who, with his staff, executes the lighting devised by the Director of Photography. The "key grip" is in charge of the staff of grips on the set who execute the placing of shadow devices, dolly tracks and camera cranes as required by the cinematographer.

Q I am interested in inquiring about the Cinemascope anamorphic unit of the original 2:55-to-1 aspect ratio, as opposed to the 2:35 ratio used today. Can you direct me to a dealer who would handle these units?

A Your question indicates confusion between the terms aspect ratio and anamorphic squeeze ratio. The original Cinemascope anamorphic units had a squeeze ratio of 2-to-1 and were an attachment placed in front of a regular lens of the 50mm focal length or longer. Eventually Bausch and Lomb supplied composite lenses varying in focal length from 40mm on up. The squeeze ratio of all these lenses was 2-to-1. With the 4-track original sound format, the maximum aspect ratio of the picture was 2.55. The industry finally adopted the mag-optical format and the image aspect ratio became 2.35.

Q Every book I read has a different definition for each camera shot. What is your definition for a long shot, medium-long shot, medium shot, medium-close shot, close shot, close-up and extreme close-up?

A These definitions often mean different things to different people but the accepted rule of thumb is: A long shot is one of scenic scope where the figures' faces are not necessarily recognizable, used to establish locale. A medium-long shot is a full figure or more of the players, used for physical movements, such as getting into a car, mounting a horse, etc. A medium shot is one of knee-size, used for group scenes. A medium-close shot usually cuts the figure at the hips. A close shot cuts the figure at the waist. A close-up is generally of head and shoulder size and an extreme close-up is of the face only.

While the above definitions are related to the human figure size, the same reasoning can be applied to inanimate objects. ■

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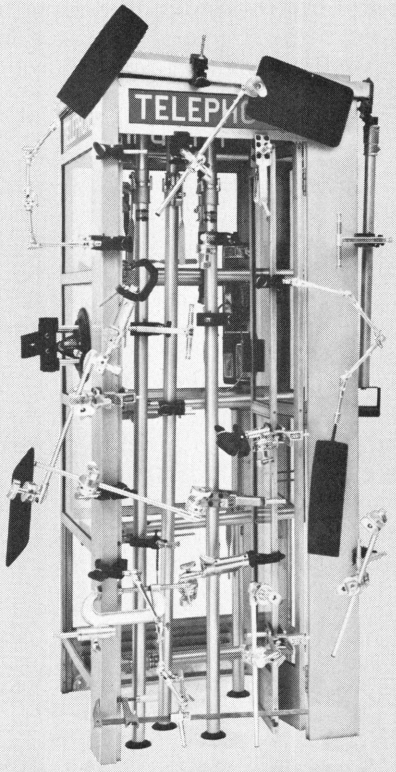

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THE STEADICAM AND "ONE FROM THE HEART"

By GARRETT BROWN

Inventor of Academy Award-winning device tells about weeks of working with such meticulous artists as Francis Coppola and Vittorio Storaro

The first day of so-called "Technical Rehearsal" was full of surprises, both pleasant and fearsome. I had last seen Vittorio Storaro on the far side of a pair of water buffalos driven by cheerful non-English-speaking types who were herding me out of control toward huge burning effigies by a train on a plain in Spain for Warren Beatty's REDS. I had been looking forward to working with Vittorio for Francis Coppola on a more mundane subject, on the completely controlled sets for Francis' completely controlled Zoetrope Studio's ONE FROM THE HEART—A simple human story—a parable of love and jealousy set amid the barbarous jangle of re-created Las Vegas.

I was aware that the film had already been exhaustively rehearsed—first as a radio drama, set to animated storyboard sketches and polaroids, and then as a crypto-video-play shot as rapidly as a soap opera in "genuine" Las Vegas. Technical Rehearsals provided yet another chance to shoot the entire movie without rolling film; the real shots on the real sets with the real cast, to be edited from the video-assist images almost as we progressed.

TECHNICAL REHEARSALS

Now began the careful blocking and debugging of the final sequences—including a number of elaborate tracking shots originally designed to permit the actors to carry on through large hunks of script, photographed by a choreographed succession of cameras; hiding from each other, popping out from closets, swinging by on cranes, rising up through the floor or dropping from the ceiling. (In practice, most scenes ended up being shot by one camera at a time, because neither Francis nor Vittorio was ultimately willing to compromise the staging or lighting to effect the successive-camera scheme.) The idea anyway wasn't to dazzle folks with our footwork. I was happy to find, for instance, that the intended use of the Steadicam was not as a stunt camera, but just to help get the lens where it was wanted throughout some long stretches of the story—without the need for arbitrary cuts because of doorsills, tight quarters, steps, or bumpy terrain outdoors.

For the budget, and/or perhaps because of a slight excess of enthusiasm for my operating ability, it was decided that the Steadicam would only need to be on hand for the first few days of rehearsals. I could practice the early shots, and when I returned for production I could alternate between shooting and rehearsing what I missed with the second team. This dubious plan meant that after my departure, Vittorio would have to impersonate the Steadicam when required with a tiny hand-held video camera, (with which he became almost too adept at threading his way through the sets!)

Calmly, as if explaining the benefits of artillery to an aborigine, Vittorio then told

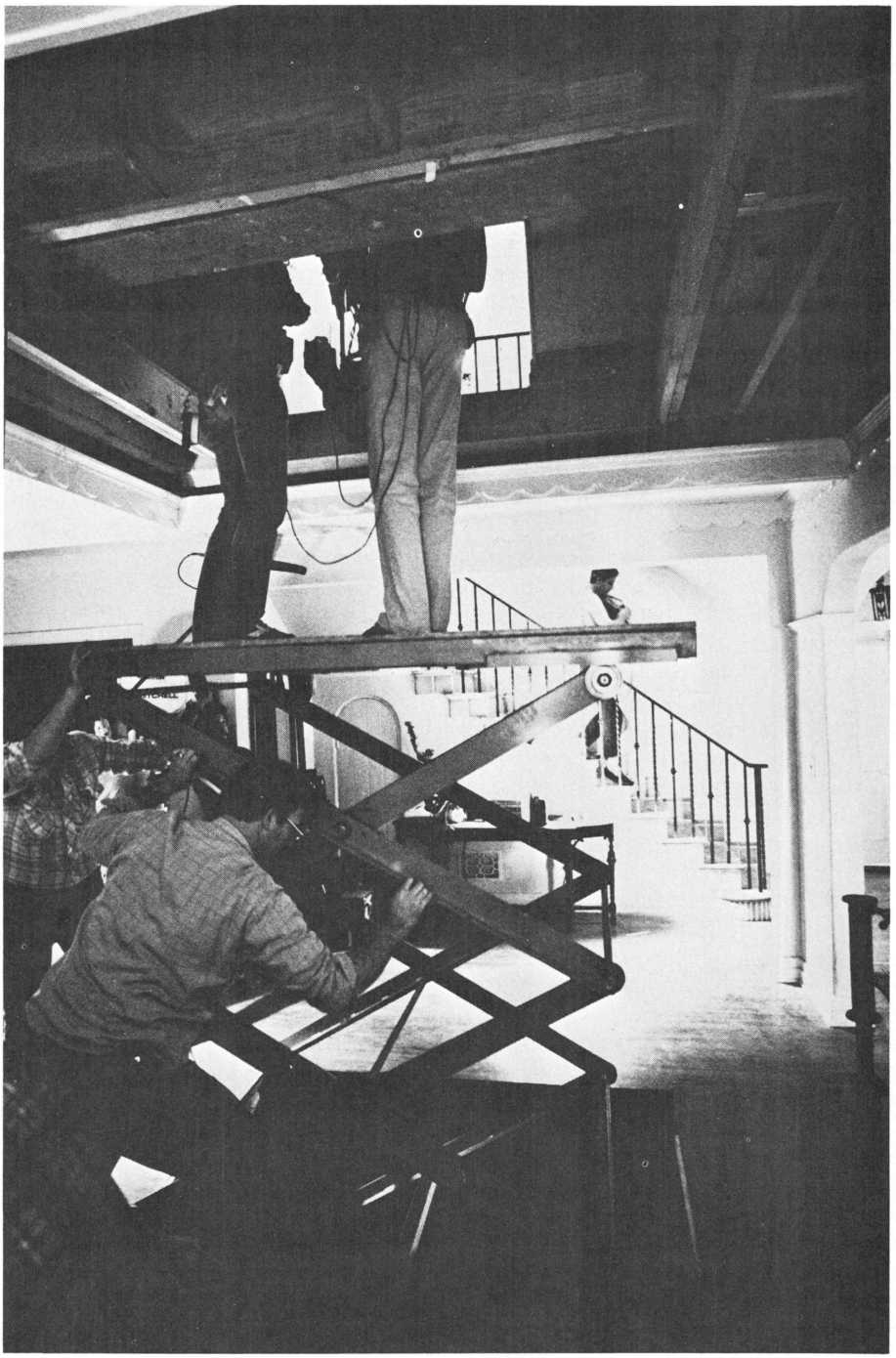
On the set of ONE FROM THE HEART, filmed at Zoetrope Studios, Garrett Brown (with Steadicam well in hand) and director Francis Ford Coppola consider various escape routes, as Raul Julia, Teri Garr and hundreds of dancers press closer. Cinematographer Vittorio Storaro (in plaid shirt) prepares to run interference. (Photos: Zoetrope Studios. Additional photos courtesy of Peter Sorel.)

me that several of these shots would also require the new 20-60mm Cooke-Varotal zoom to be mounted onto the Arriflex 35BL, so the focal length could be eased in and out as needed; a wide panorama here, a traveling closeup there. This was a first! The lens had not actually shown up yet, but I was assured that it was tiny and weighed little more than a *linguine.* When it finally arrived, it appeared to my feverish brain to be about three feet long and made of depleted uranium! In use it didn't prove to be as heavy as expected, but I did notice that I had to plan ahead if I wanted to stop moving or I would be carried on right out the studio door!

Some of my shots were to run on for over four minutes, and I knew from experience that although the results can be wonderful, this kind of shooting becomes a strain on both players and crew because of the increasing possibility of error, artistic or technical, as one gets down to the final strokes. No one is quite so disconsolate as the Steadicam operator who rounds the final corner after 450 feet of flawless Eastmancolor to find that the wrong door has been left open or a lamp has burned out. Vittorio was designing such elaborate lighting cues that the electrical department alone would be engaged in a flat-out odyssey just to get through some of these scenes.

My last hope of tranquil days, ambling through easy linear shots disappeared with finality when I tried *The Elevator*—an eighteen-thousand dollar scissors-type contraption which rose from a concealed hole in the floor and lifted two intrepids up through a hole in the ceiling and back down. In the middle of a complex shot I could step aboard and rise up to the second floor in "Hank and Franny's house" to arrive at the same time as whoever was climbing the adjacent stairs. This would, of course, yield a less drastic angle than if I also climbed the stairs in front of, or in back of, our actors. I was elated with the existence of this device, but depressed by certain peculiarities of its operation. (About which more later . . .)

After three days I left with most of the routine technical matters worked out—the interface of the Technovision lenses with my wireless focus motors, and the reception of the wireless video signal from the Steadicam within the neon-infested confines of the studio were, as usual, the most troublesome. I had a reasonable idea of my first shot: Ride down on the crane, dismount, stroll through a mob of extras, up and through the window of a travel agency and down inside fo a scene with Teri Garr as "Franny" and Lainie Kazan as "Maggie." With four zooms. Degree of difficulty, 8.4—Claus Dibiasi watch out!



The Elevator, a combination marvel and nightmare, allows the camera to stay with the actors as they move up and down stairs during long tracking shots in the house. Likened by Garrett to "riding a camel in the basket of a balloon", it needed to be stabilized by grips to even match up with the hole in the ceiling.

COPPOLA AND STORARO

Francis Coppola is an acknowledged master of the film medium as it is presently constituted. However, he is gifted (or cursed) with the ambition to innovate, to advance the art and science of filmmaking and to drag the medium singlehandedly into the 21st Century. He looks ahead to an era when movies will be digitally recorded as high-resolution video; edited strictly by computer-juggling trillions of binary numbers, and distributed by transmitting the ultimate numbers via satellite to exhibitors, or even straight to subscribers in the home. Francis will, of course, direct by satellite from Shangri-la or space shuttle, with actors in San Francisco, sets in New York, and lunch in Rome. I believe, as do many, that he is a sensitive artistic human being, but he is clearly here on earth somewhat ahead of his reservation.

Vittorio Storaro seems to have arrived several centuries late. A throwback to the high rennaissance painters—Correggio with a light meter. A gifted technician

Continued on Page 82

REPORT ON EASTMAN COLOR HIGH-SPEED NEGATIVE 5293

By ALLAN L. WILLIAMS
Manager, Pacific Southern Region M.P. & Audiovisual Markets Div. – Eastman Kodak Company

Seven top cinematographers apply the "acid test" to Kodak's new color high-speed negative and find it to be even more amazing than promised

Eastman Kodak Company has introduced a high-speed color negative film which goes a long way toward meeting a current industry demand to improve production values while reducing the cost of origination.

The new film was introduced at the annual conference of the Society of Motion Picture and Television Engineers last November. It will be trade tested during the first quarter of this year with initial sales to begin shortly after this period of customer evaluation.

Eastman color high-speed negative film 5293 is rated for an exposure index of 250 in 3200°K tungsten light. This makes it more than one stop faster than the popularly used Eastman color negative II film 5247 which is rated for an E.I. of 100. However, a dozen New York and Hollywood cinematographers have already successfully tested the new film at E.I.s ranging up to 1000, and in some cases 1000 E.I. with a one-stop "push."

The cinematographers participated in the production of demonstration footage for presentation at the SMPTE conference and also at a meeting of ASC. Footage was exposed by Andy Laszlo, ASC, Bill Fraker, ASC, Meredith Nicholson, ASC, John Alonzo, ASC, Dave Walsh, Sol Negrin, ASC, and Robert Liu, to name just a few.

There was no discernible grain buildup when the film was rated for an E.I. of 500, and it continued to hold solid blacks even when it was exposed at very low light levels. It has tremendous exposure latitude. Some of the demonstration footage was exposed with as little as five to 10 footcandles of illumination, or less.

Most of the cinematographers rated the film very good even when they exposed it at a 1000 E.I. "I was very pleased with the skin tones and color saturation all of the way through," says Nicholson. "At 1000 E.I. with a one-stop push, I saw a little haze on the faces, however this is something which can be taken care of during printing."

Everyone thought that the test footage was extremely consistent.

The new high-speed film is compatible with Eastman color negative II film. Both films are designed for processing in the same Process ECN-2. This means that cinematographers will be able to use the two films interchangeably, choosing the emulsion which best suits each situation without sacrificing image quality. We believe that the new film will primarily be used in low light situations, where there is fast-moving action, and for special applications, such as underwater cinematography.

Because of its wide exposure latitude, the new film also has obvious applications in process photography. Alonzo noticed this on the test footage that he exposed at Burbank Studios. He filmed a character in front of a rear projection screen. Normally, in this situation, using an anamorphic lens, he would be shooting at T/2.8 or 3.5, or 4 at best by raising the key light. By rating the new film for an E.I. of 500 he was able to use a 5.6 T-stop. This allowed him to hold both the character in the foreground and the details on the screen in sharp focus.

The implications are important. It means that in many situations, the high-speed film will allow producers to create more realistic illusions with process photography. This capability alone should go a long way toward solving some of the production cost problems facing the industry. In many instances, producers will be able to create realistic illusions on sound stages instead of traveling to remote locations to get "must" shots.

There are going to be many other opportunities to reduce production costs without sacrificing production values. In many cases, production values will be enhanced while dollars are saved because of the latitude of the new film.

Consider the way three-camera situation comedies are produced. It takes a tremendous amount of light to illuminate sets. This builds up heat. As a result, as soon as the shooting stops, the air-conditioning goes on. This is expensive, and the cost will continue to go up with each OPEC price raise. A faster color negative emulsion will lessen actor discomfort as well as air-conditioning load because of reduced illumination.

Nicholson tested the new high-speed film on stage 27 at Paramount, where he normally shoots *Mork and Mindy.* He used three Mitchell BNCR cameras with Taylor-Hobson Cooke Varatol 20-to-100mm zoom lenses. Filming was done on a typical *Mork and Mindy* set with the assistance of three stand-ins. Nicholson shot six tests. The first time around he used Eastman color negative II film rated for an E.I. of 125. He set all of the cameras at stop T/4, using approximately 160 footcandles to light the stage. During the next five sequences he used the high-speed film rated for E.I.s of 250, 500 and 1000 and 500 and 1000 with one-stop "pushes." The lenses were fixed at stop T/4, however, Nicholson reduced the level of light from 80 to 40 and 20 footcandles during the first three sequences, and then shot at 20 and finally 10 footcandles during the filming of the last two scenes.

His initial reaction is that in this type of a sit-com where bright, high-key lighting is essential, the new film can be used at an E.I. of 300 to 400 without sacrificing image quality. This would allow the cinematographer to reduce the footcandles needed to light the scene to between 50 and 80 which would more than halve the need for air-conditioning and energy use.

Alonzo describes his reaction to another test he shot using a Golden Panaflex camera with prime lenses on a sound stage at Burbank studios. He had someone walk 125 feet through a variety of light sources. He repeated the same sequence six times. The first time he exposed Eastman color negative II film rated for an exposure index of 125. He used a T/2.8 stop with 64 footcandles of light. The same procedure was repeated five times with the new high-speed film. He used the same T-stop for these scenes, rating the new film for E.I.s of 250, 500, 500 with a one-stop push, and 500 and 1000 with a one-stop push, using 32, 16, 8, 4 and 2 footcandles, respectively.

The only problem that he saw occurred at two footcandles, where the working lights suddenly took over. Alonzo says that he believes that the new film can easily be used at E.I.s of 500 and 750, and adds that he wouldn't hesitate to rate it at an exposure index of 1000. "Even at an E.I. of 1000 and a one-stop push, I think we will be able to compensate and give it a touch more exposure, and then print down in the lab," he says.

Alonzo, who has directed four movies of the week, was also able to comment upon the impact of the high-speed film from that perspective. "I can appreciate the value of working with unobtrusive lighting," he says. "It's bad enough that the cast has to think about the camera. The glare and heat of lights can be very distracting when you want someone to concentrate upon acting. The fact that we are going to be able to work on sound stages with 50 footcandles instead of 200 is very exciting. Also, the use of smaller, compact units and lamps will give us a capacity for doing

more setups, and longer master shots. We will be able to use very small units to light large areas and this should allow the lighting crew to work faster with increased efficiency. Ultimately, I think the new film is going to provoke the imaginations of producers, writers and directors as well as directors of photography."

Liu tested the new emulsion on a sound stage at CBS, Studio Center, where he normally films *The Lou Grant Show.* He exposed the new film during rehearsals with the same lighting, camera and lenses normally used to produce the show. One sequence was filmed in a city room. There were 50 footcandles in the foreground and a slight fall-off in the background. Liu was working with a Panaflex camera and a 20-to-120mm zoom lens.

"Normally, I rate Eastman color negative II film at an exposure index of 125. In a difficult lighting set-up like this, I sometimes 'push' the film and rate it for an E.I. of 250. There isn't much room to hide lights on the city room set, and we wanted to retain a low-key effect since the scene is supposed to occur at night. Furthermore, the 6:1 lens can only go to stop T/3. By pushing the 5247 film one stop, I was able to work at T/3.5."

Liu repeated the same sequence six times using the new high-speed film at different exposure stops. He rated the film for an E.I. of 250 and used a T/3.5 stop, E.I. 500 with a T/5 stop, E.I. 750 with a one-stop push using a T/6 stop, and 1000 E.I. with a one-stop push using stop T/6.3. Liu also turned off all of the fill lights, and relied solely on overhead fluorescent illumination from fixtures in the ceiling. This gave him a reading of around 25 footcandles. He rated the film for an E.I. of 500 and used T/5 stop.

"I like the idea of being able to use a 6:1 lens with a T/4 opening on our city room set," he says. "This will give us an opportunity to hold sharper images from the front to the back of the city room. If we rate the film for an E.I. of 250, we can gain either a camera-stop or reduce our lighting. If we reduce lighting we can save time, and time is money in this business."

All of the cinematographers who participated in the test feel that the most important applications will be at practical locations. Directors will be able to continue shooting right through sunset extending the production day while at the same time increasing opportunities for visual storytelling.

Walsh notes that the new high speed film ties right in with the new cameras and speed lenses used in the production industry. "I can see us doing more chase scenes at night," he says. "I'm also excited about the opportunity of using the new long lenses which haven't been available for most night work before because of restrictive T-stops. With the new high-speed film, there won't be any problem working with a 1000mm lens that only stops down to T/8. All this provides some interesting new opportunities for story-telling. We'll certainly be able to go on location with less equipment while maintaining photographic integrity. This also opens up new opportunities for using practical locations more effectively. Everybody in this business has been in the position of shooting in restrictively small, practical locations on a hot summer day with 22 people trying to crowd in. Then, the lights are turned on and in 10 to 15 minutes the heat gets unbearable. Now, with a film speed of 500, we will need less light—keeping the sets cooler, the crews more effective, the actors more comfortable; all in all, better working conditions! Obviously, we all have a lot to learn about how to use the new high-speed film. There is probably going to be some temptation at first to try and push its latitude to the maximum every time. However, I think the knowledgeable people in the industry will quickly find and use its remarkable capabilities."

Alonzo tried using the film while shooting from a helicopter flying above Los Angeles at night. He was using a Vistavision camera with a 50mm lens. He exposed the high-speed negative for E.I.s of 250, 500 and 1000 with normal processing, and 500 and 1000 with one-stop pushes.

"I was looking for details in the streets and on the sides of buildings," he explains. "The problem that we have had with 'slower' films is that ground lights tend to blossom when we are shooting with a T-stop of 1.8 or 2; however, if you go to a 3.5 or 4 T-stop to eliminate the blossoming, you lose details in the shadow areas. With the high-speed negative film the ground lights looked natural and there was more detail in the shadows."

Liu filmed a rehearsal of a night exterior for *The Lou Grant Show.* He was using a Panaflex camera with a 35mm super-speed Panavision lens. The shot involved filming a police van seen down a long alley. He had one Baby and one Senior light providing around 15 footcandles in the foreground, and two Brute arcs putting out 20 footcandles in the background.

In this situation, he compared Eastman color negative II film rated for an exposure index of 250 with a one-stop push to the 5293 high-speed film exposed at the same E.I. without pushing. In both instances, he set the lens at stop T/1.8. Then, he repeated the scene using the high-speed film rated for an E.I. of 500 which allowed a T/2.5 stop.

"I couldn't see any loss in image quality," he says of the latter test. "I was very happy with the rendition of contrast, the saturation of color, and especially the blacks. We don't normally have a lot of lights to do exterior lighting on night location scenes for a TV series. I feel this film will allow us to work comfortably with available light and just a little fill in the 10 to 15 footcandle range. This is going to save us a lot of set up time, and it will allow us to work in very realistic situations."

The timing for the introduction of this new film probably couldn't be better. We appear to be at a unique juncture in the history of the entertainment film industry. There is a great deal of anticipation regarding the potential impact of cable and pay TV and what they might mean to the future of the industry.

Many people think we are at the beginning of a new Golden Age. All of the signs are there. During the past 20 years the number of projection screens in theaters has increased from around 12,000 to approximately 18,000. During the past 10 years, the number of paid admissions have increased from approximately 820 million to close to one billion.

Commercial television which was once thought to be the graveyard where the theatrical film industry would be buried has proven to be fertile ground. Between 75 and 80 percent of prime time network programs are consistently originated on film. The TV industry has even created a new film art form, the mini-series, or long-form motion picture.

When you add them up, the totals are impressive. During the past year, producers started some 260 feature films and exposed nearly 100 million feet of 35mm color negative films when television is included. And many people believe the best is yet to come.

There is one thing that you can count on. There is going to be a tremendous market for good films. However, at the same time, many producers are concerned about the rising cost of production. Perhaps their concerns were heightened by a few big budget box office flops during the past several years. The current round of high interest rates is probably another factor.

In any case, the bottom line is that producers are now talking about topping out theatrical film budgets at $10 million, and made for TV movies at $1—4 million.

As a result of these concerns there has been much speculation about the use of so-called new technologies. Much of this has focused on future high-definition video systems as a potential medium for moviemaking and presentation. Some

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INDUSTRY ACTIVITIES

UCLA EXTENSION HOSTS CONFERENCE ON PRODUCING MOVIES FOR TELEVISION: NETWORK AND CABLE

UCLA Extension will present "Producing Movies for Television: Network and Cable," the seventh in a series of independent motion picture production conferences, Saturday, February 6, 9 a.m. to 4 p.m., at the Century Plaza Hotel, Los Angeles.

Joan Barnett, vice president, Motion Pictures for Television, NBC Studios, will be the special guest speaker.

Topics and speakers include "Business and Legal Aspects: Packaging, Acquisition of Rights, Sources of Revenues, Current Securities and Tax Aspects," David Comsky, attorney, Freshman, Mulvaney, Marantz, Comsky, Forst, Kahan and Deutsch, Beverly Hills; "The Making of the Film" Buck Houghton, writer/producer; and "Business Affairs Aspects: The Production Point of View," Sid Kalcheim, vice president in charge of Business Affairs, Columbia Pictures Television.

Others include "Network Programming Practices," Allen Sabinson, vice president, Program Administration, NBC Studios; "Sales, Publicity and Promotion Aspects," George Gaber, Director of Communications, Viacom; "Cable and Pay Television Aspects," Jane Deknatel, Home Box Office; and "Packaging," Robert L. Graham, agent, Creative Artists Agency, Inc. David Comsky is program coordinator.

The $145 fee includes luncheon, coffee break and handout materials.

For additional information call the Department of Business and Management, UCLA Extension at (213) 825-7031.

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AMERICAN FILM FESTIVAL NOW ACCEPTING ENTRIES FOR 1982 COMPETITION

DATES. The Educational Film Library Association is now accepting entries for its 24th annual American Film Festival, to be held June 14-19 at the Fashion Institute of Technology in New York City. Deadline for accepting entry forms is *January 15, 1982.* The American Film Festival is the major event of the non-theatrical film field, and an important showcase for 16mm films and videotapes for use in libraries, schools, museums, and other community programs.

ENTRY REQUIREMENTS. Only 16mm optical track films and ¾" video cassettes released for general distribution in the United States between January 1980 and December 1981, are eligible for competition. Details of competition regulations and official entry forms may be obtained from the American Film Festival, 43 West 61 Street, New York, N.Y. 10023. Telephone (212) 246-4533.

CATEGORIES. The 1982 Festival will include over 60 categories covering the diverse areas of Art and Culture, Education and Information, Mental Health and Guidance, and Contemporary Concerns. Documentaries of 50-110 minutes may be entered in one of several "Feature-length Documentary" categories. There will also be special competitions for Business and Industry, Health and Safety, Elementary/Junior High Instructional Films and Video.

AWARDS. A Blue Ribbon will be awarded to the highest rated film or video production in each category. Runners-up receive a Red Ribbon. The prestigious EMILY award goes to the film which

Continued on Page 98

The versatile Tyler Middle Mount provides smooth tracking, vibration isolation and finger tip control of camera, zoom and focus for your helicopter shots.

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"OF MINIATURES, MATTES AND MAGIC"
Continued from Page 39

on a floppy disc.

We needed a way of putting each sign back in the exact same position on our table top as when the test move was done. In order to insure proper registration we built a table top seven inches wide and six inches deep. A 4x5-inch opening was cut out of the middle. Each sign was mounted on its own 4x5-inch board, which by way of plastic dowel pins could be placed on the table top in exact registration no matter how many times it was taken in and out.

Certain portions of each of the signs had no internal light sources and required external lighting. In these instances we tried to create the feeling that the light filling these areas was from the spill of the internal lighting of each sign.

To give a further sense of depth, dimension and realism, I wanted to be able to selectively rim and back light the sign with an ambient moonlight effect, as well as suggest other ambient light sources from street lights and other casino signs that might seem to be off camera.

The problem was to have total control over the ambient light hitting each part (area) of the sign. In some instances we were talking about lighting an area only one or two inches square.

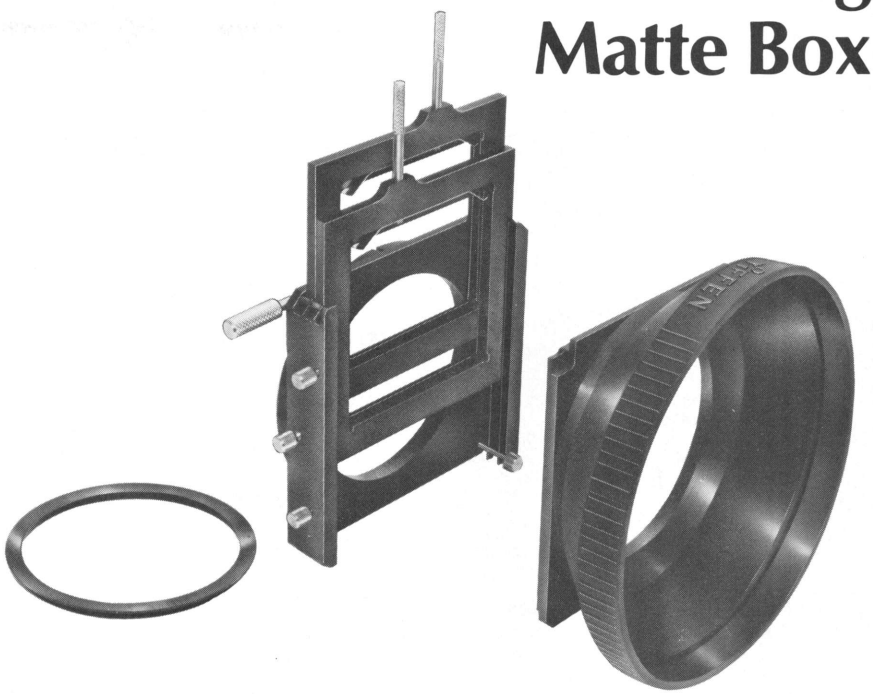
Photographing a miniature does not mean using fewer light sources. In many instances you need more sources than if you were working with the real thing. In lighting a normal size subject you can use a broad light source and selectively use flags and nets to arrange the light the way you want it.

With miniatures it is almost impossible to use flags and nets. Rather, a separate light source has to be used for each area. In many instances we had eight to ten units working on a single sign and the several palm trees surrounding it.

I had planned to use Midgets and Babies with focal spot attachments. Had intensity not been a problem, the Midgets would have worked well. However, the Babies often did not provide the extra intensity that I needed and the focal spot attachments did not work out very well. Foster Denker suggested using 1K and 2K Molelipsos instead. These are basic Mickey and Mighty-Mole units with built-on focal spots. Like the focal spot for the Midgets, there are movable blades to allow cutting and shaping the light.

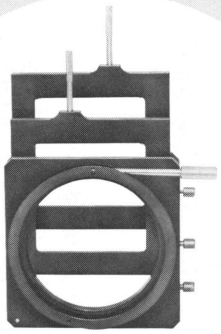
The motion control camera crane is quite large and, since it moved in very

TIFFEN
Universal Rotating Matte Box



The Tiffen Universal Rotating Matte Box gives you the opportunity to hold three filters with a collapsible rubber lens shade on all of your lenses.

The Universal Matte Box consists of five parts; the rotating body assembly, two filter frames for holding 3x3 inch filters, the front mount with the rubber lens shade, and a Series 9 insert ring.



REAR VIEW OF MATTE BOX

The rotating body assembly, the two filter frames, and the Series 9 insert ring are made of aluminum, milled, and machined to very close tolerances and then black anodized to our specifications The front mount is made of a very tough and durable Space Age plastic, machined and milled to fit the matte box and rubber lens shade. The rubber lens shade is made from a very rugged material that will stand up to the hottest or coldest of situations. The lock screws are made from stainless

LENS ADAPTER RINGS

steel to prevent corrosion. The matte box complete weight is 15 ounces and is only 3 inches long from front to back.

The matte box fits over your lenses by the use of lens adapters. The Series 9 insert ring allows you to hold a Series 9 filter in place when you are using the adapter ring with your matte box.

The matte box allows you to hold two 3x3 inch filters, or two 4x4 inch filters. By removing the filter stop screw, graduates can be slipped in and moved up and down with ease. You can do all of the above with a Series 9 filter in place when using the adapter ring, and the lens shade may be on at all times.

With the many varieties of lens adapters, and the many Series 9 adapter rings for your lenses, you can use the matte box with any 16mm camera with fixed or zoom lenses, and with several 35mm cameras and lenses with no extraneous support gear.

With the many combinations of filters that can be used, and the many lenses that can be fitted, this is why we call it the TIFFEN UNIVERSAL ROTATING MATTE BOX. Stock No. 439.

Write Department AC for New Professional Brochure and Price List

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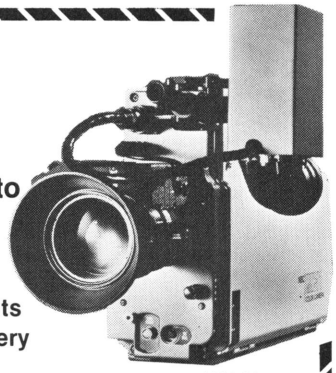
Its a Ritz AV-Cine PRICE BLITZ



Subject to Prior Sale!

New Cameras & Accessories

Arriflex 16 SBGS	$5,500.00
Cinema Products Cat 1C505 16mm GSMO Body	5,500.00
Cinema Products Cat 1G500 400' Magazine	1,800.00
Cinema Products Cat 1R500 12x finder	950.00
CP GSMO w/2 400' Mags, 2 Batteries, 2-Chargers, Pro grip, New "0" Finder, Large Alum. Case	12,500.00
CP GSMO As Above plus Agenieu* 9.5 to 57mm Zoom Lens	15,000.00
1G166 400' Mitchell Magazine	270.00
1L185 Mike Light Bracket	70.00
1DI Crystal Pistol Probe	300.00
Spectra Pro Meter	160.00
Spectra Pro II Meter	180.00
Spectra Viewing Glass	20.00
1G240 Pro Film Pouch	12.50
JK Animation Motor for Bolex EBM	475.00
Oxberry Media Pro w/Bolex SBM/ 16-100 Zoom Lens/Animation Motor Complete	6,500.00
339-394 Arri V.S. Controll	375.00
341-155 Arri Pistol Grips	50.00
339-336 Arri Zoom Motor/Zeiss	200.00
339-210 Arri 200' 16m Mag	400.00
339-220 Arri 200' 35mm Mag	400.00
339-001 Arri Matte Box	200.00

Used Cameras & Accessories

Bolex EBM w/16-100 Auto Lens	$2,000.00
Auricon Crystal Conversions	395.00
B&H 70 TMR Body	95.00
B&H 70 DL Body	95.00
B&H 70 DR Body	275.00
Eclair ACL w/CP XTAL Motor, 2 400' French Mag & Case	6,500.00
Arri 16mm Fibreglass Blimp	500.00
Arri 16mm Metal Blimp	195.00
Arri 35II B, VS Motor, Case	1,450.00
Arri 35II A, VS Motor, Case	990.00
CP 16A w/Head and Case	950.00
Arriflex 16S Body	1,700.00
Arriflex BL w/12-120 Lens, 400' Magazine Carrying Case	8,400.00
CP Studio Rig	1,100.00
Bolex MST Motor	200.00
Beaulieu R16B Body	300.00
Beaulieu R16B w/12-120 Angenieux	900.00

New Lenses

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Angenieux 10 to 150 CPR MT IN319	3,800.00
Angenieux 1.5x Tele Attachment	1,500.00
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Angenieux 16 to 44 CPR MT IN322	3,500.00
Century 3.5mm CPR MT	550.00
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Arri 75mm Cinegon f2.2	395.00
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Schneider 100mm f2.0 Arri MT	495.00
Canon 18-108 f1.6 CMT	500.00
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Packs/Belts New Battery

Cine 60 9107 Pack 8/12V	$280.00
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9707 Pack Univ 7AH	375.00
7003 Belt 8/12V 7AH	260.00
7004 Belt 30V 7AH	590.00
6301 Belt 8.4V	170.00
6307 Belt 8.4V/12V	250.00

New Lighting Equipment

4C140 CP Pro Kit (5 lite)	$650.00
4C010 CP Bubble lite Kit (2-lite)	400.00
4C120 CP Cat Kit	225.00
4C100 CP Aero Kit	450.00
Lowell S192 Kit	330.00
Lowell T194 Kit	710.00

New Sound Equipment

Nagra Stereo Recorder	$5,000.00
Nagra SNN Recorder	2,400.00
Nagra SMR Mic Mixer	400.00
Nagra TSR260 Resolver	450.00
Nagra LPS SN Resolver	450.00
Sennheiser HD4004 Headphones	25.00
Sennheiser HD414X Headphones	55.00
Sennheiser K3U Power Supply	110.00
Sennheiser ME20 Omni Mic	50.00
Sennheiser ME88 Dir. Mic	150.00
Sennheiser ME80 Dir. Mic	135.00
GKC Amplifier Speaker	195.00
GKC Mic Cue Head.	55.00
GKC Mic/Line Amp. Model B	90.00

New Support Equipment

Universal 12BVSL Fluid Head	$475.00
Universal 205BV w/Ball	525.00
Gitso 505B Legs w/Ball	380.00
Lisand TK76 Shoulder Mount	25.00
Lisand SSP73 Shoulder Brace	125.00
Quickset Quick Release	50.00
Cine 60 Snaplock Jr.	130.00
Marotzke Shoulder Pad	10.00

New Editing Equipment

8T000 U/F 16 Upright Flatbed 6 Plate Editing Console	$7,900.00
Maier Hancock 816 Hot Splicer	370.00
Perfix 16/35	190.00
Perfix 16	155.00
Cine Bug 16	95.00
Cine Bug 35	95.00
Cine Care CC 16/35	189.00

Video Equipment

Technicolor ¼" VCR	$895.00
Technicolor 412 Color Camera	795.00
Panasonic ½" VCR Portable	899.00
Panasonic ½" VCR Portable Programmable	1,099.00
Panasonic PK 700 Color Camera	595.00
Panasonic PK 801 Color Camera	895.00
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close to the signs, the Molelipsos gave us the ability to work some distance away while still maintaining the desired intensity and control.

Working with such small areas I found it necessary to rely a great deal on my spot meter for the correct ambient light exposure. I generally turned on all the sign lights and did the basic ambient lighting to my eye and then took final readings with my spot meter.

By balancing the ambient light to the lights of the sign this generally allowed the ambient light exposure pass to be made in conjunction with one of the exposure passes for the internal lights. This was an important consideration in terms of cutting down the shooting time as in many instances one exposure pass might take several hours.

Once a set-up was in place I made detailed diagrams showing each light, its location and the exposure reading. I was constantly amazed at how moving a light less than a ¼" could result in a full stop of intensity change on the sign.

Keeping in mind that we were using a 20mm lens and often making 120-180+ moves around the signs and shooting on a shiny black reflective surface, key grip Jim Lavin did an incredible job of flagging lights off the lens and keeping unwanted reflections off the table top. (In some instances, we created a veritable "jungle" of flags.)

SWARTHE

In addition to controlling camera motion, the Dream Quest system controls the speed and order of the animating incandescent lights—up to eight separate movements of the camera and an additional eight separate light circuits.

Before final photography began, a series of wedge tests for color and density were shot. A typical wedge starts at ½-second exposure and runs up to 32 seconds (½, 1, 2, 4, 8, 16, 24, 32 seconds). Time exposure is used rather than f-stop for two reasons.

One, the lens must be stopped down to f/32 for maximum depth-of-field. Two, a constant f-stop must be used; otherwise, depth-of-field and image size will change, causing separate passes to be out of register.

Typically, the wedge test shows that the neon lights need far less exposure time than the incandescents. The motion control system can shoot matched passes of the same camera move, so each element requiring a

Continued on Page 55

The ARRI News Update

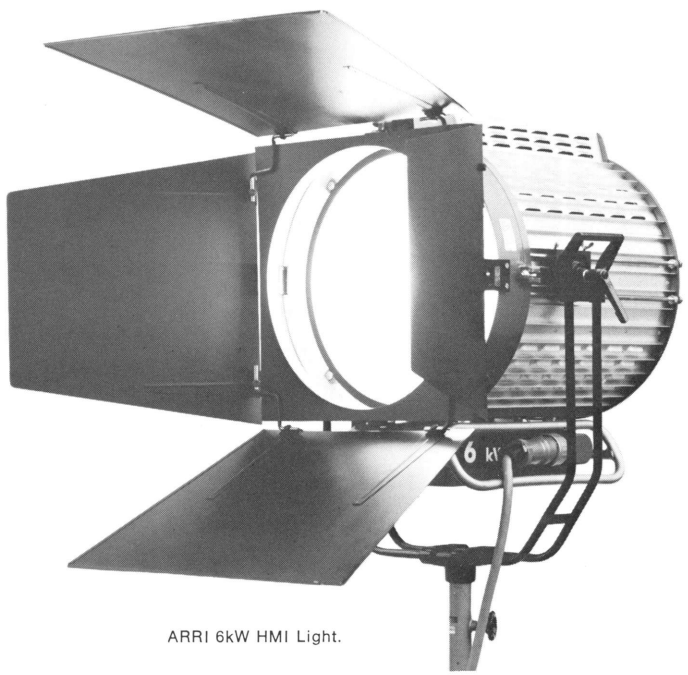
Published periodically
by Arriflex Corporation
JANUARY 1982 ISSUE

We at ARRIFLEX would like to wish you a very Happy New Year.

New ARRI 6kW HMI.

At the SMPTE conference in Los Angeles last October, we displayed our first 6kW fixture using the powerful new daylight balanced light source from ILC Corporation. This new bulb delivers 650,000 lumens and thus becomes a challenge to the popular carbon arc brute. At over 110 lumens per watt, the electrical efficiency of this new source is higher than anything known so far. More electrical energy gets converted to light than ever before — and less into heat.

The ARRI 6kW HMI fixture has a housing roughly the size of that of our 4kW HMI head, but with additional thermal design features such as the convection stack on the burn chamber. It weighs about 85 lbs; and the 6kW's ballast is no bigger than the ballast for our 4kW light.

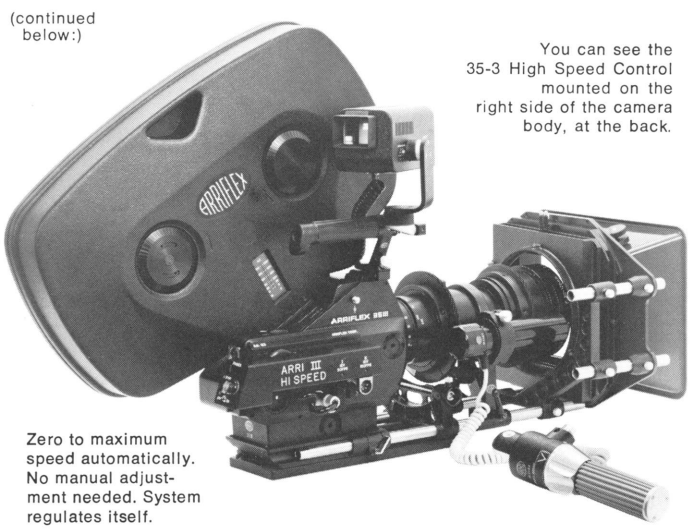


ARRI 6kW HMI Light.

New High Speed Control for 35-3.

As you probably know, the 35-3 has a built-in variable speed range of 5 to 50 frames per second, using the standard 12V battery pack. The new high speed control lets you run the camera at up to 100 frames per second by plugging an additional 12V source directly into the attachment. With a slight increase in supply voltage, the speed can go beyond 100 fps, but should not exceed 120 fps.

(continued below:)



You can see the 35-3 High Speed Control mounted on the right side of the camera body, at the back.

Zero to maximum speed automatically. No manual adjustment needed. System regulates itself.

The 35-3 HS Attachment unit mounts on the lower right-hand side of the camera. It is fastened via a large threaded ring that replaces the bridge plug. The unit has a mode switch for sync speed and variable speed, a camera on/off switch, a variable speed control knob and a digital speed readout.

Pre-select speed

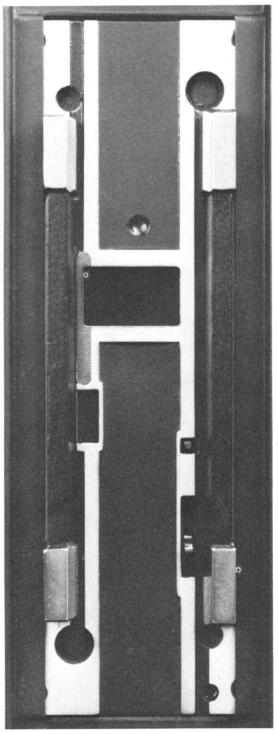
With the proper power connected to the HS Attachment, any speed within its range can be pre-selected before you start the camera. And you can switch from sync speed to variable speed during a shot.

New 16SR Super 16.

It has always been our view that the Super 16 format has only a limited potential in our industry. But we continue to receive inquiries about the 16SR camera in that special format. We also think that productions intended exclusively for TV release can, almost without exception, be shot in 16mm. For television use, the standard 16mm aspect ratio is ideal, of course.

On the other hand, it's obvious that a property to

(Continued on Page 2)



16SR Super 16 film channel.

Super 16 continued

be produced for a large theater screen should ideally be filmed in 35mm original. Super 16 is somewhere in between and its application is therefore more limited, it seems to us.

Once you make the decision to shoot a film in Super 16, you must approach it with the utmost care for technical detail. Super 16 reduces safety margins in the handling of the film in all stages. Since a later blow-up is the objective, it is more important than ever to have the best possible image to start with.

Importance of registration pin

In selecting a camera for the Super 16 format, the advantage of a registration pin movement clearly speaks for itself. Because of the increased Super 16 image area, the guide rails that stabilize the film are considerably reduced in size. Image steadiness depends more than ever on accurate positioning. For this, the registration pin is indispensable. The 16SR, of course, has one — so it is an obvious candidate for Super 16 conversion.

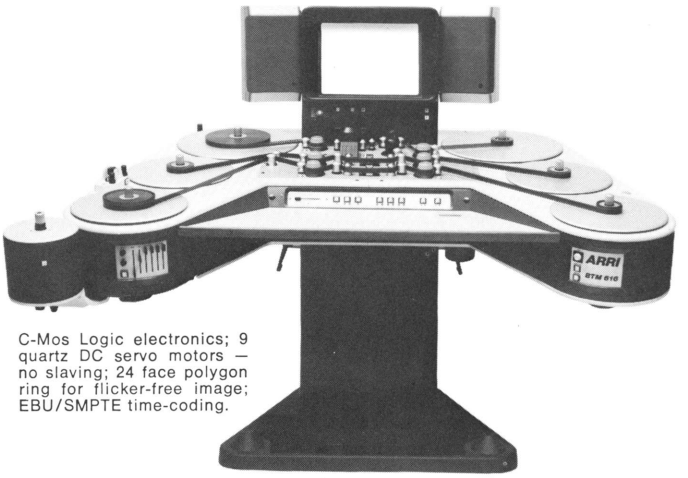
When we decided to make 16SR cameras available in the Super 16 format, we approached the project with attention to detail. Ease of operation and compatibility were not to be compromised. Image quality was to be second to none.

First, we repositioned the lens mount, so that it's at the optical center for the Super 16 format. This permits the widest possible selection of lenses because the image circle does not have to cover an off-center aperture.

Second, we moved the viewfinder area to correspond to the Super 16 aperture. This provides a full and accurately centered composition area — with proper aspect ratio markings, of course. Third, the tripod mounting thread and the locating flange were repositioned to align with the new optical axis, so that all standard 16SR system accessories are properly centered and can be used.

Standard 16SR magazines can be used unmodified

One very important fact: the magazine needs no conversion. You can use normal 16SR magazines on both the standard SR and the Super 16SR.



C-Mos Logic electronics; 9 quartz DC servo motors — no slaving; 24 face polygon ring for flicker-free image; EBU/SMPTE time-coding.

Six plate: one picture path, two sound tracks.

New Editing Console: BTM-616.

Although we've been making flatbed editing machines for more than fifteen years, they've been given relatively low priority in our product line; and we haven't imported them to the U.S.A. until now.

Meanwhile, a great many manufacturers have entered (and left) this field. Today there is a range of products available, with technology ranging from poor to excellent.

All this time, however, horizontal editing machines have shared one character-

Latest model of the 16SR: the 16SR-2.

Since the summer of 1981, we've been making deliveries on the latest 16SR model: the 16SR-2. It incorporates a large number of minor and a few major changes that further refine the 16SR system. Many of the improvements are evolutionary and not noticeable on the outside — changes in materials, drive components, bearings, and so on. Combined, they have a positive effect on the operating characteristics of the camera. Noise level, temperature range and service life are all better than ever.

The most significant feature of the 16SR-2 is its new way of isolating noise-generating components. The new, patented acoustical insulation block used in quieting the 35BL-3 is also built into the 16SR-2. This change alone makes it approximately 2dB quieter than earlier models of the 16SR.

New APEC meter system

The SR-2 also incorporates a number of new operating features. Most noticeable among them is the fully electronic, silicon-element exposure control — the latest version of our APEC system. The sensitivity range of the new APEC has been extended

Look at the editor's right arm. It's resting on the 616's horizontal work surface. His right hand is operating a control on the almost vertical panel. Other controls are on sloping surfaces, easy to see and to reach from sitting position.

istic: essentially, they are still a derivative of the rewind table with a viewing system attached. Of course, there have been developments in the internal technology and control features of the flatbeds. As a workspace, though, many of them have not been ideal.

As a first step in the design of our new 16mm editing console we arranged for a graduate student at the University of Munich to write a computer program into which we fed the human engineering factors associated with editing. This included details of work habits, the frequency of need for various controls, and differences in physical stature.

Slanted console

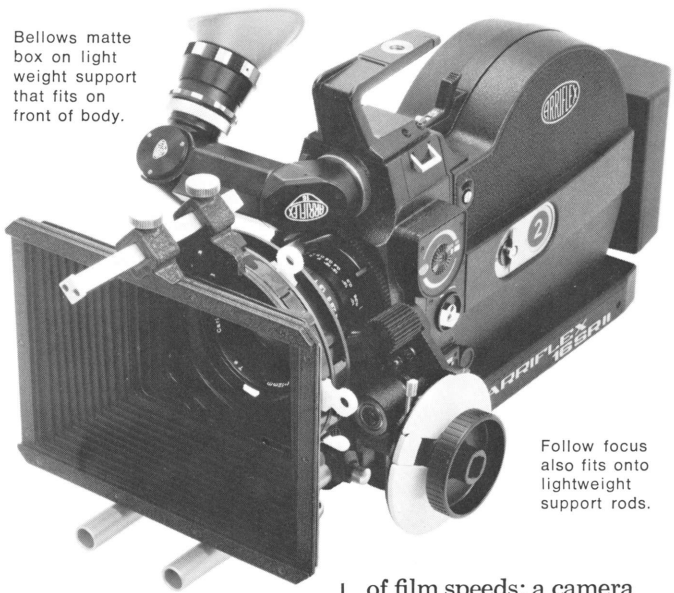
The outcome of this analysis is a slanted control console with various work surfaces. Some controls are mounted on the sloping surface, some on the horizontal area and some on a vertical panel — all in front of the editor.

Only after defining this ergonomically efficient shape did we turn the project over to our engineers. The result is an editing machine that should be the least tiring to the editor.

to cover film from 16 to 1000 ASA and lens apertures as fast as T 1.3.

In addition, the new APEC continually senses the speed of the camera. It displays the correct reading at the eyepiece over a 4-stop range at all speeds from 5 to 150 frames per second. This lets you follow action and get accurate exposure information at any speed in the camera's range. Once the camera is plugged in, this measurement is displayed whether the camera is running or standing still.

In the automatic version of the 16SR-2 and in the high-speed SR, you can get this exposure compensation automatically when you use an auto-diaphragm lens. When you change camera speeds, the iris opens up or closes down automatically to compensate.



Bellows matte box on light weight support that fits on front of body.

Follow focus also fits onto lightweight support rods.

Manual or fully automatic exposure control covering the practical range of film speeds; a camera speed range from 5-150 fps; lenses as fast as T 1.3. This new APEC completes the development of exposure systems for the professional motion-picture camera.

Sachtler leaves ARRI January 1.

When we began to market Sachtler products in the U.S.A. a little over two years ago, we started at a level below zero. The products had previously been sold by various official and unofficial agents. What reputation Sachtler products did have was poor, despite their technical excellence.

Mr. Wendlyn Sachtler, founder of the company and the chief dynamic force behind it, approached us and we quickly came to a mutually agreeable arrangement. Unfortunately, Mr. Sachtler died soon after that.

During the next two years we worked hard, and, we think, well. Sachtler products are known and respected now; they have secured a prominent place in the motion picture and video industry. In fact, we were so successful that the new management at Sachtler recently decided to do it themselves! As of January 1, 1982, Sachtler products will no longer be sold by Arriflex Corporation. They will be distributed in the U.S. by a Sachtler-owned subsidiary.

We would like to thank everyone who has purchased Sachtler products from us in those two years. We will do everything in our power to ensure that your interests are secured under this new arrangement.

A new line of ARRI fluid heads and tripod legs is in the pipeline. We'll be giving you details soon.

16SR High Speed: the story so far and automatic APEC.

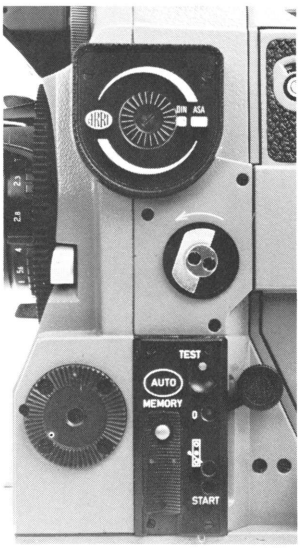
The 16HSR first saw action in the U.S.A. at the Lake Placid Winter Olympics and was well received there. Reports coming in on the camera in use here and around the world indicate different applications based on the same features unique to the 16HSR.

In Western and Eastern Europe where much of the sports coverage is shot on film, the 16HSR is now being used because of its 150 fps top speed and because the same camera is quiet enough for on location interviews.

In the U.S.A., of course, most sports coverage is electronic; and we've become used to the poor quality of televised slow-motion derived from slow-speed tape playback.

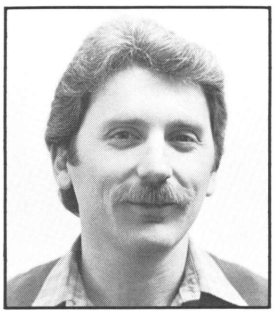
Television commercials frequently call for slow-motion action, too—and here the poor quality of slow-speed tape is obviously unacceptable. Some TV spots are now being shot in 16mm—and here again, the 16HSR's high-speed capability and quiet running are why it's being chosen.

In 35mm, commercial producers are using the 35-3 for high speed and the 35BL for sync sound. Budget-conscious 16mm producers apparently like the fact that they can now get the equivalent of both the 35-3 and the 35BL in the 16HSR.



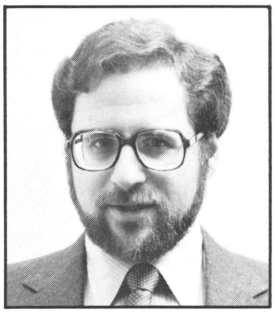
High speed with low noise is no longer the only feature unique to the HSR. On the latest model, you can couple its new APEC exposure control to an automatic lens and get perfect exposure at any speed. You can switch from sync sound speed to variable speed in the middle of a shot and maintain accurate exposure. You can change from, say, 12 fps to 96 or 120 fps in mid-shot—and exposure stays perfect. As far as we know, this can't be done with any other camera.

New ARRI people.



Tony Tamberelli

We are pleased to announce that Tony Tamberelli, formerly Executive Vice President of General Camera Corporation, has joined our Blauvelt office as Customer Relations Manager. Tony brings with him a strong technical background in motion picture camera equipment and he will be involved in every phase of our business, primarily in marketing and service. We wish him success in his new position here with us.



Charlie Davidson

We are also pleased to welcome Charlie Davidson as our new Product Manager for Lighting. Before joining our Blauvelt staff, Charlie was with Colortran for four years, as Northeast Regional Sales Representative. For five years before that, he was an IATSE electrician and toured extensively with various shows. We wish him success here with Arriflex and we think you'll find his knowledge of lights and lighting helpful.

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For some time, there has been a need for a variable speed control with an appropriate digital tachometer (and footage counter) as an accessory for the 16SR system.

We hope to have filled this need with the ARRI-TACH model DCT-1. The unit comes in a relatively compact aluminum housing that mounts atop the camera on the carry handle. It measures 4¼" x 3" x 2⅛" (not including bracket) and weighs 21 oz. with cord and bracket. It provides ten operating features:

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unique exposure time is shot separately. The camera shoots continuously, with its motor turning slowly and the shutter revolving slowly, all camera movement seemingly as slow as the hour hand on a clock.

If, for example, the incandescents needed an exposure time of six seconds, it would take the shutter 12 seconds to go through one revolution which would equal one frame of photography. For a 20-second scene on the screen (480 frames x 12 seconds per frame) the incandescent light pass consumes 96 minutes of shooting time. After shooting that pass, the film is wound back to frame one with the lens cap on. The incandescent lights are turned off and the neon lights turned on. The camera then shoots the same movement again, but now the exposure time is only three seconds per frame, so shooting time is now 48 minutes. The movements are the same as before, only the entire system runs faster.

It is possible to change shutter speed during the shot to make the exposure change. When the camera tilts down to the reflecton of a neon sign on our shiny black floor, the camera system slows down enough to make a two-stop increase in exposure. There are many subtle adjustments which are only possible because of computerized motion control.

The last shot in the opening sequence takes the camera right through a miniature "Golden Nugget" sign. We built a special enclosure for the camera and the miniature so that we could fill the area with Mole smoke. This put a glow around the incandescent lights.

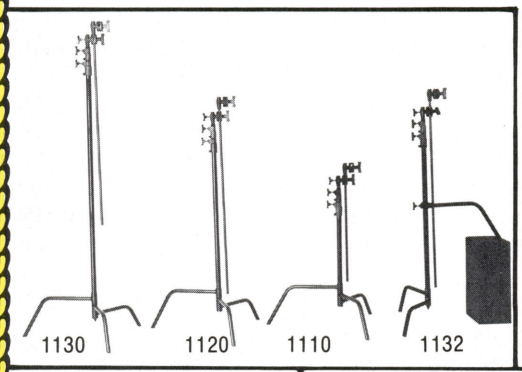
After completing photography of "Golden Nugget," a black and white silhouette matte was photographed of the same move. The matte was used in the optical compositing to put a background with twinkling light *behind* the sign. That background was designed to blend in with the live action Fremont Street set which begins the story of the film.

EBERLEIN

Three of the miniature shots in the opening sequence required desert sands to be blowing and shifting and

Continued on Page 74

Roundin' up the Tough Guys!



1130 – 60" Double Riser

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All shown with #1112 grip head with single extension arm.

#1111–Grip head, 2½"

#1114–Extension arm only

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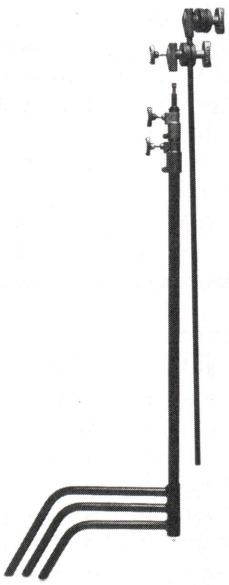
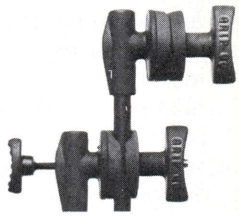
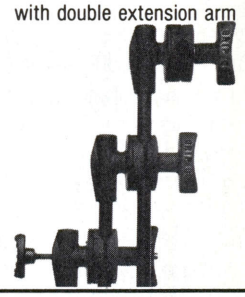


#1112–Grip head with single extension arm



#1113–Grip head with double extension arm



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ACADEMY HONORS GEORGE FOLSEY, ASC

The Academy of Motion Picture Arts and Sciences pays special tribute to one of Hollywood's legendary cinematographers in colorful program

By LYLA DUSING

A Salute to George Folsey, ASC, was presented by the Academy of Motion Picture Arts and Sciences on Nov. 23 with John Landis who directed AN AMERICAN WEREWOLF IN LONDON, ANIMAL HOUSE and KENTUCKY FRIED MOVIE acting as master of ceremonies.

Film clips shown from several of Folsey's films traced his career from the days when he worked as a 14-year-old office boy for Adolph Zukor in New York and his first job behind the camera a few years later.

As office boy, Folsey ran the switchboard, operated the elevator, played parts in pictures and ran errands. One of his favorite errands was to get John Barrymore's lunch. Barrymore gave him a 50-cent tip, he was paid 15 cents for his own lunch and didn't have to use it because the restaurant that prepared the lunch gave Folsey large pieces of French bread mounded with fresh butter. This augmented the $6 per week salary he received.

Folsey learned how to load magazines and, although there was no such thing as an assistant cameraman, the need for such resulted in his unofficially becoming one.

When the cameraman on HER BRIDAL NIGHT walked off the production in 1919, Folsey was asked if he could shoot the picture. His reply was, "Of course; I can move the studio if you want." At the tender age of 19 he felt he could do anything.

In 1920 Folsey was using a hand-crank camera shooting at 16 fps, which was state-of-the-art equipment in those days. He watched John Barrymore change from Dr. Jekyll to a frightening Mr. Hyde. "They didn't tell me what Barrymore was going to do, and when the head went down and came back up with false teeth, foaming mouth, disheveled hair and a terrible grimaced look, it scared the hell out of me," Folsey related.

When Folsey was shooting the Marx Brothers films, there was a frequent problem in finding the stars when they were needed. The problem was solved by making dressing rooms that resembled prison cells and chaining the zany brothers to the furniture.

Folsey studied the art of composition at galleries and museums and went to night school to learn about photography.

His first trip to Hollywood was in 1922 when, under contract to Famous Players, he came out to photograph two films for director Chester Franklin. Folsey traveled back and forth from one coast to the other until 1932 when the Astoria Studios closed.

He told his friend, "Joe (Ruttenberg), I'm going to California." Ruttenberg seconded the idea and they set out across the country, Folsey driving a new light blue Pierce Arrow.

Folsey signed with Paramount and the first thing they did was to send him back to New York to photograph THE BIG BROADCAST OF 1932. Next he did ANIMAL KINGDOM for RKO and then went to MGM. "I came for one picture and stayed 27 years," he said.

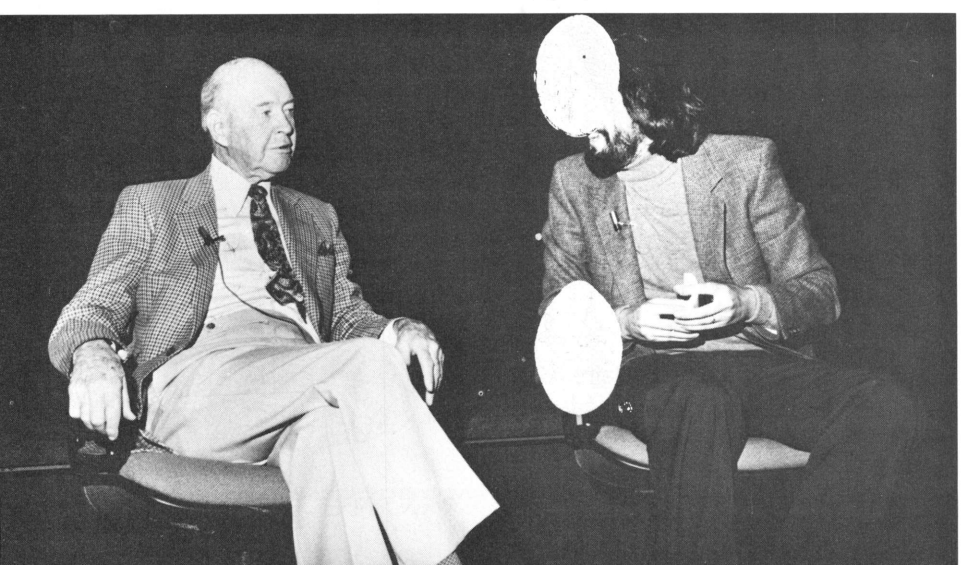
During his successful career Folsey worked on such films as THE GREAT ZIEGFELD, MEET ME IN ST. LOUIS, GREEN DOLPHIN STREET, ADAM'S RIB, A GUY NAMED JOE, EXECUTIVE SUITE, THE WHITE CLIFFS OF DOVER and countless others. He has been nominated for 14 Academy Awards, and has won a CLIO and an EMMY.

Among the many contributions to his field, Folsey is credited with developing the technique of using reflective and diffused light while at MGM, moving from the high-contrast black and white lighting of the day towards a softer effect, as seen in GREEN DOLPHIN STREET and IF WINTER COMES, both shot in 1947.

At 83, Folsey shows no signs of slowing down. He has taught cinematography at the American Film Institute for the past five years and has been a member of the Board of Governors of the American Society of Cinematographers for more than 40 years, and was president of that organization for the 1956-57 term.

His plans for the future are, "To play a lot of golf, and go to art school to learn how to paint and draw."

The evening on which he was honored by the Academy was climaxed by viewing the 1929 film, APPLAUSE, directed by Rouben Mamoulian who was in the audience along with George Cukor, Joseph Ruttenberg, ASC and about 400 other George Folsey fans, admirers and fellow members of the A.S.C. ■



George Folsey, ASC, shown with Director John Landis, who served as master of ceremonies for the special tribute paid to Folsey by the Academy of Motion Picture Arts and Sciences. Folsey, a 14-time Academy Award nominee, regaled the audience with tales of his early days in the film industry.

Folsey was recently honored by his fellow members of the American Society of Cinematographers during a dinner meeting at the A.S.C. clubhouse.

TALKING TECHNICALLY
Continued from Page 20

that the two images really are where they should be it is necessary to make image alignment tests by photographing a fine horizontal and vertical cross-line test target set at the point of convergence and to compare the positions of the crosses on the processed film under a powerful measuring microscope to check that the horizontal line photographs at exactly the same height relative to the perforations in each strip of film and that the vertical lens is set at exactly the same distance from the inside edge of a perforation, which on 35mm must be on the sound track side of the film (the side where the full-fitting registration pin is fitted).

All of this sounds easy, but must be done to very fine limits if eyestrain is to be minimized.

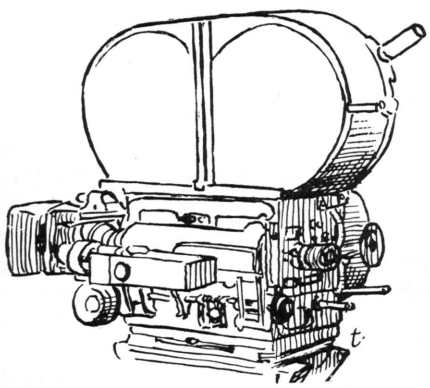
For showing 3D films taken on two cameras, the easiest form of presentation is to use two projectors running at the same speed, and fitted with similar focal length lenses, plus more powerful than normal light sources, an aluminum screen, and a supply of 3D polarizing filters and glasses.

Stepper motors fitted to two projectors is a simple solution which takes a lot of beating.

For showing in large cinemas two images on a single 70mm film is ideal because you get no jiggling or keystoning between the two projectors and it is usually possible to put more light through 70mm film than through 35mm.

There's lots more to it than all of this, of course, because good 3D should, above all things, look natural if it is not to be more important than the script and should not send the audience out of a cinema with a splitting headache. Otherwise we will have to wait another few years until it is rediscovered again.

The author wishes to acknowledge his gratitude to Charles Smith of Stereo Image Techniques, London, who has been shooting 3D films for over 30 years, for the help and advice he has given in preparing this article. ■



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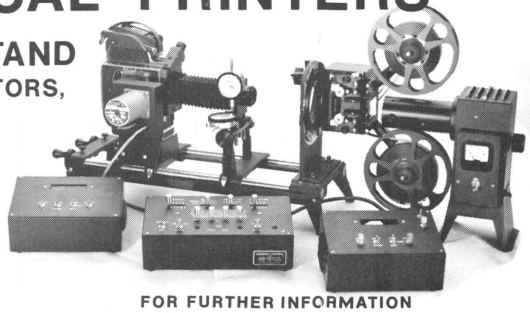

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SPECIAL EFFECTS FOR "ONE FROM THE HEART"

Continued from Page 31

the film. Photographic design for the entire film was under the direction of Vittorio Storaro.

A team of special visual effects supervisors was assembled which, over a ten-month period, worked to realize the intentions of the director, the production designer, and the cinematographer. These were Wally Gentleman, Bob Swarthe, Ray Fielding and Don Weed. The job of creating and operating the miniatures was given to Greg Jein, the man who had created the extraordinary miniatures in "1941."

Most of the early visual effects work was conducted on the premises of Zoetrope Images, the special visual effects production and research arm of Zoetrope Studios, which had been created by Francis Coppola for his studio's own productions. On Zoetrope Images' stage, located several blocks from the main lot in central Hollywood, a 95-foot platform was built, approximately six feet wide, on which several dozen miniature buildings were positioned—motels and hotels, residences, restaurants, hamburger stands, parking lots, playgrounds and schools, churches, industrial buildings, and a variety of illuminated billboards and signs. A scale of ¼"-to-the-foot was selected for these miniatures. It was known early on that this would create depth-of-field problems during photography. However, a scale of ½-inch would have required an effects stage almost 200 feet long, and this was not available.

Most of the miniature signs incorporated elaborate, separately controlled neon lights, the individual bulbs of which were as small or smaller than so-called "grain of wheat" bulbs. Elaborate electronic control units which cycled these lights in a realistic fashion were designed by the miniatures staff so as to simulate the dazzling variety of lighting which exists on the streets of the real-life Las Vegas. Many of the hundreds of tiny lights in the miniatures had a life span of about 50 hours, which placed an additional premium upon the efficiency of the crew in preparation and photography. One of the principal concerns of the crew was that set-up and rehearsal time would exhaust the life span of the bulbs and that they would begin to burn out just as final photography began.

A 90-foot long set of precision rails was positioned in front of the miniature, along which a carriage bearing the camera moved by means of a winch-driven cable. The axis of the camera's lens was positioned a few inches above the pavement of

the miniature set, producing an equivalent "real-life" height of about 4½ feet—ideal for compositing with shots of the actors photographed in an automobile. A 90-foot long bank of custom-built diffuse flood lights was mounted above the miniature set, supplemented by high-intensity spot lamps positioned on the floor along the route of the platform.

The speed of the camera carriage along the rails was set so as to produce an equivalent automobile speed of anywhere from 10 to 60 miles per hour depending upon the requirements of the script. At medium speeds, a total take of about two minutes' duration was possible with this arrangement.

In order to preserve the illusion of a great distance behind the foreground miniatures, which would extend backward across the desert to the distant mountains, an "infinity background" was made to move at the same speed as the camera. In real life, it is a peculiarity of our perception of far distant objects, as we travel along the highway in an automobile, that those objects do not appear to move. The same effect was simulated with our miniatures by mounting a large painting of the mountains and sky on rails behind the miniature set and moving it synchronously in the same direction and at the same speed as the camera. A number of such paintings were produced for different time-of-day shots: noon, sunrise, sunset, and late moonlit evening. Photography of the daytime sequences was accomplished without too great a depth-of-field problem. The light level was brought up to more than 1,000 footcandles, and relative apertures which ranged from f/5.6 to f/16 were employed with a 35mm lens.

Sunset and evening shots were much more difficult to photograph, however, requiring that a sufficient exposure be produced to record the tiny bulbs in the miniature signs. For these shots, the Eastman color negative was pushed a stop and a relative aperture of f/5.6 was used, with focus favoring the middle ground of the miniature set. Under these circumstances the closest foreground detail was lost in a blur, but this turned out to be acceptable partly because the camera was moving at a simulated speed of 45 miles per hour and partly because the foreground was hidden by the automobile body in all of the rear-projected shots with the performers.

Pin-registered background plates of this miniature, in all of its time-of-day lighting changes, were photographed at 90°, at 45° forward, and at 45° backward angles. When this had been accomplished, the entire 90-foot length of miniatures was dismantled and another collection of miniature buildings and desert detail were set on the platform to allow for photography of an opposing set of angles showing the other side of the street along which the performers' car was travelling.

The building and photography of these miniatures took the better part of three months before the variety of angles, automobile speeds, and time-of-day shots were made to everyone's satisfaction. The miniatures were then dismantled and moved into a larger stage on the main lot of Zoetrope Studios. Greg Jein and his crew reassembled them so as to allow a look at a substantial part of the entire miniature city of Las Vegas, and featuring the "strip" with its variety of neon-lit hotels, casinos and illuminated billboards. It was required by Francis Coppola that the camera be able to "noodle" through the streets of this miniature city providing footage for the opening scenes of the city as well as transitional footage which could be used later in the film to link sequences.

Because of the substantial size of the miniature set the first photography of the miniatures in this configuration was achieved by means of a "pitching lens" assembly with a camera mounted on a large "Zeus" crane which swung over the set. A crew headed by Paul Kenworthy supervised the very precise movements of the crane, the camera, and the pitching

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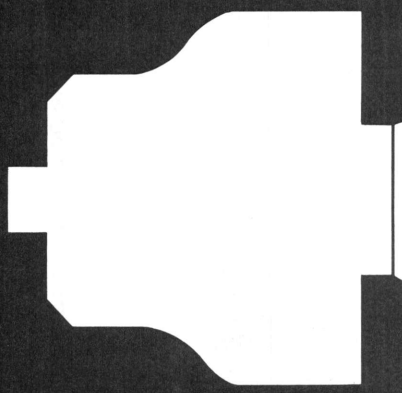

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lens assembly by remote control, the operators viewing the images being photographed by means of a video tap on the camera.

A substantial amount of footage was photographed with this rig, but depth-of-field problems continued to plague the supervisors. In addition to the existing problems encountered in gaining a sufficient exposure of the tiny bulbs in the signs, a stop and a half was further lost in using the pitching lens system.

It was finally decided to disassemble and re-set the miniatures once more and to photograph them with a motion control system furnished by the Dream Quest Company. In this manner, by executing repeated, identical camera movements over the same miniature set pieces, a cumulative exposure could be built up on the color negative which would be sufficient to show the lights properly, while still achieving adequate depth of field to keep everything in focus.

Elsewhere in the film, miniatures of a different sort were used. In one sequence, actor Frederick Forrest leaves an outdoor set of McCarran Airport after seeing his girlfriend board a plane. He walks to the parking lot and climbs into his open convertible just as a heavy rain begins. Suddenly, the jet liner carrying his girlfriend passes *over* the terminal building and the parking lot at about 400 feet altitude and roars upward into the sky. Now, obviously, no airplane in history has ever been allowed to take off directly *over* the terminal building, but this is a fantasy and that's the way Francis Coppola wanted it. The terminal set was photographed at night with the camera mounted on a crane, descending from a 30 foot elevation to ground level as the actor gets into his car and looks upward towards the sky. The rain which fell on him came from off-screen water hoses. In the Zoetrope Images effects laboratory a four-foot miniature of an airliner was photographed against a star field, with movements of the camera under and past the miniature being made to match the camera movements which occurred on the live action set. The footage which resulted was matted into the shot of the terminal by means of optical printing. Additional rain was added for atmosphere.

An entirely different kind of problem was faced in producing a moonscape at the beginning of the opening sequence. The camera moves downward from the

CORRECTION

The December, 1981 index page of *American Cinematographer* inadvertently miscredited James Whitney's film LAPIS. The article on motion control describes James' extraordinary care in making this film. John Whitney has stated that he intended his article to be a tribute in recognition of James' artistic contribution to the expanding arts of cinema.

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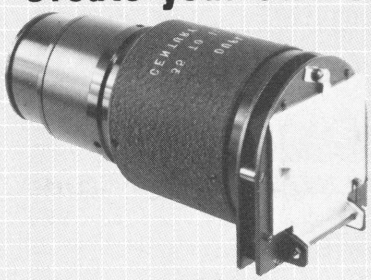

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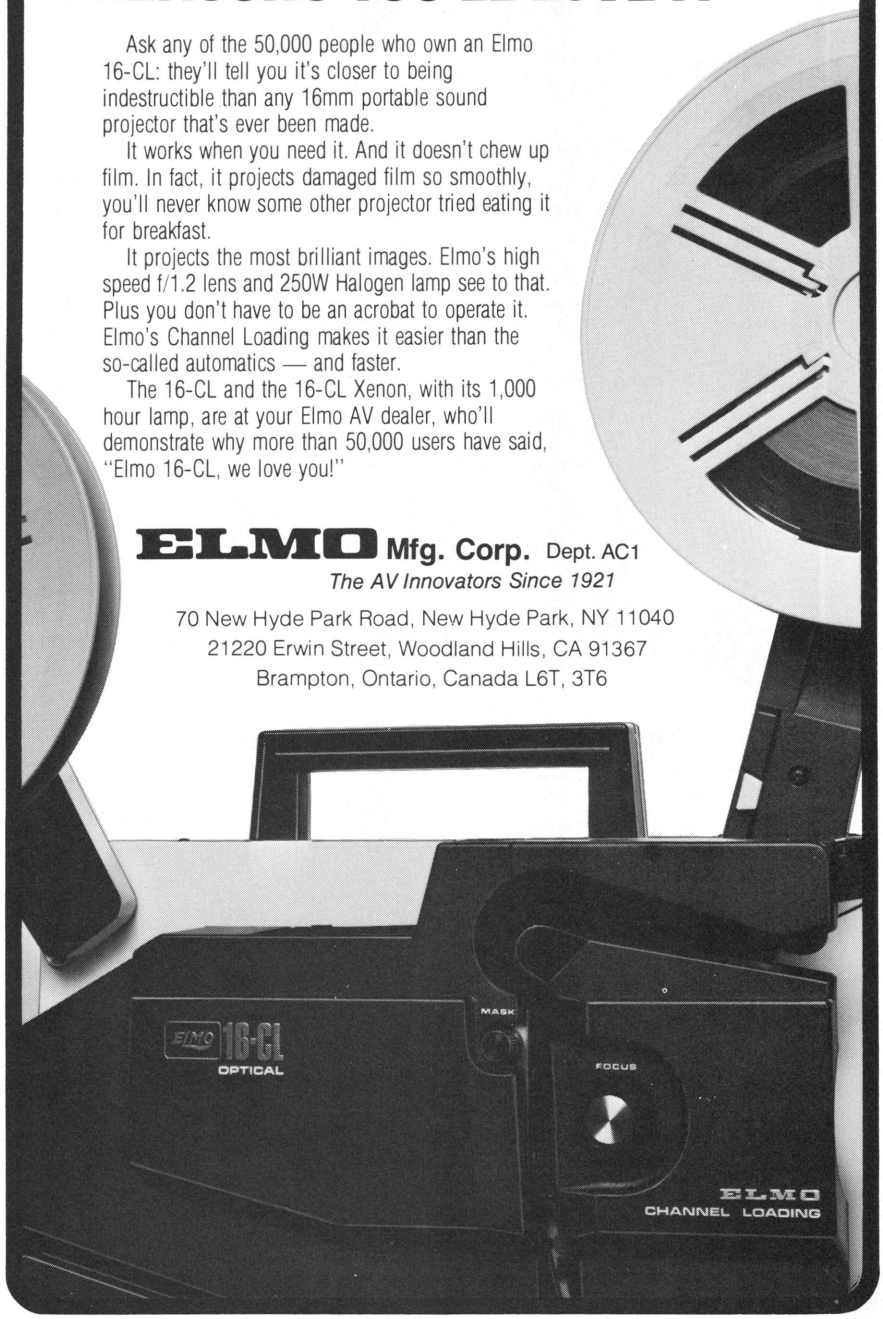

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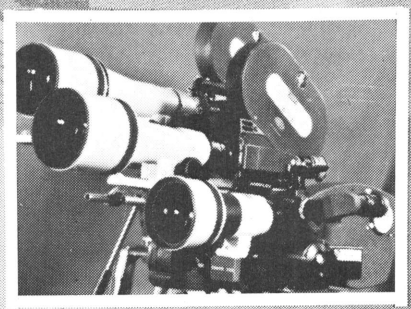

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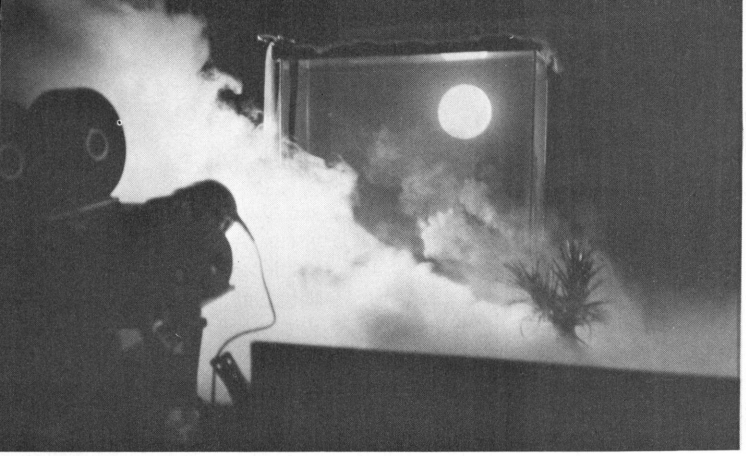
moon through a cloud bank and then across the California desert. Two different approaches to this shot were tried, the first employing a Schufften mirror shot which combined, in one pass through the camera, a miniature of the moon with a glass painting of the clouds. Camera movements, on rails, provided a lateral sweep through the clouds. For variety's sake, an entirely different approach to the same shot was also made in which a photographic plate of the moon was photographed through a water-filled tank into which jets of whitish chemicals were introduced to simulate distant clouds. These were augmented by dry-ice fog in the foreground, the camera being electrically driven through the pan and tilt movements downward into a view of the miniature desert below.

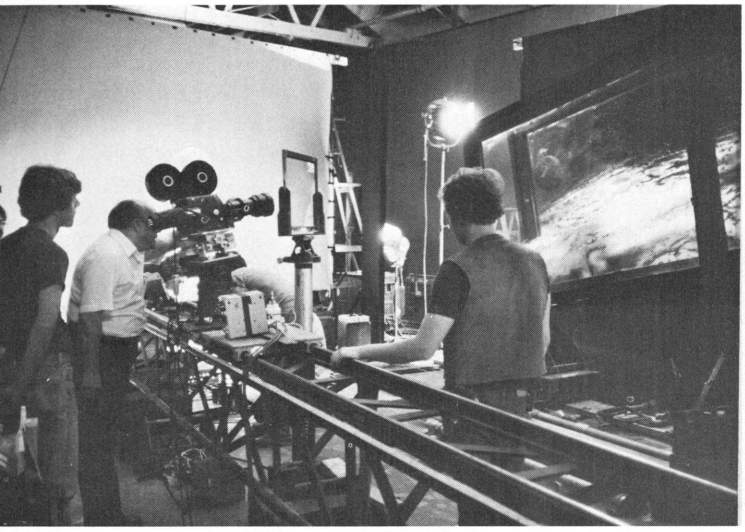
At one time or another, virtually every technique in the repertoire of the special effects supervisor was used in this film: miniatures, front projection, rear projection, optical printing, travelling mattes, matte shot printing, Schufften mirror shots and glass shots.

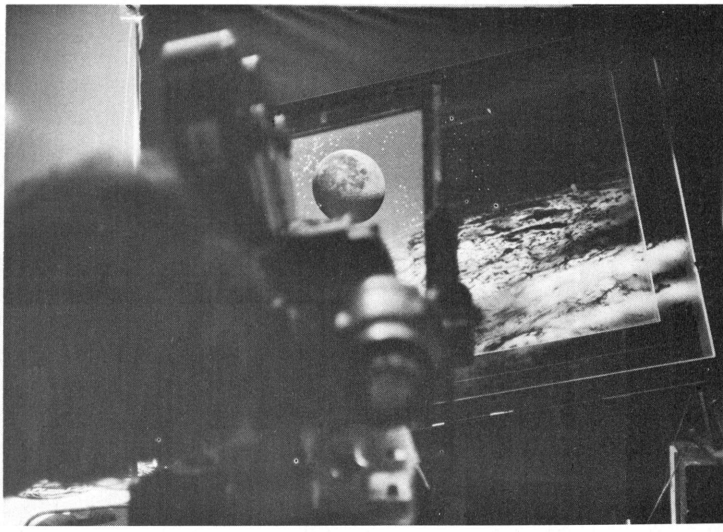
A unique piece of electronic equipment developed by Petro Vlahos and the staff of Zoetrope Studios' Electronic Cinema Department proved especially helpful in planning travelling matte (blue screen) and rear projection shots. This is an electronic compositing system which reveals on a color video screen the precise nature of a proposed composite between foreground action of performers on the sound stage and a background plate photographed elsewhere. The system allows the director, cinematographer and special effects supervisors to determine the precise manner in which foreground and background will go together, with respect to lighting, scale and movement relationships, brightness, contrast and perspective. Employing a so-called Ultramatte electronic matting system which keys on blue backings, the entire ensemble is capable of being moved from stage to stage to accommodate production requirements. The device proved to be of substantial assistance to all production heads involved in the film. Still to be determined is the possibility of relating electronic meter readings from the Ultramatte system to the wedge tests which are performed at Zoetrope Images for travelling matte work. Assuming that wedge tests could be dispensed with using this device, a substantial increase in the speed of optical printing operations and a decrease in cost could be achieved.

The special visual effects group also made excellent use of the new electronic story board created by Thomas Brown and his staff for Francis Coppola. The sys-



(LEFT) One way to make a moon. The camera at left photographs an astronomical plate of the moon through a tank of water into which jets of chemicals have been introduced to produce cloud effects. (RIGHT) Another way to make a moon. Key Grip Jim Dunn adjusts a two-dimensional miniature of the moon. (BELOW LEFT) Effects Supervisor Wally Gentleman sights through the camera for a Schufften (mirror) shot composite of a miniature of the moon and of clouds painted on glass. The moon miniature is positioned against a star field backing. A beam-combining two-way mirror is mounted directly in front of the camera. (RIGHT) The composite of moon, star field and clouds, as seen from behind the camera during photography. The moon is actually located about 12 feet to the left of camera.





tem, which is described elsewhere in this issue, provides an animated, moving story board on a video screen, with images taken from the art direction sketches, test footage, still photos, and production footage.

To a considerable extent, ONE FROM THE HEART served as a proving ground for these and numerous other innovations developed by Francis Coppola for future productions at his studio. Predicting a revolutionary change in feature film technology in the near future, he is one of the few film producers in the Hollywood industry currently prepared to commit his own films and his own studio's resources to the development of techniques and hardware whose ultimate use he considers inevitable. ■

(ABOUT THE AUTHOR: Dr. Raymond Fielding is Head of Zoetrope Images, the special visual effects production and research arm of Zoetrope Studios. He is the author of The Technique of Special Effects Cinematography.)

(LEFT) Actress Lainie Kazan poses against a blue ChromaKey background for a composite shot using the ULTIMATTE system. (RIGHT) The final ULTIMATTE composite of Miss Kazan and the Las Vegas neon signs can be seen on the video monitor at left. Zoetrope engineer Clark Higgins adjusts the controls. The ULTIMATTE electronic compositing system, invented by Petro Vlahos, eliminates many of the problems usually associated with the blue screen matting process.

IFPA WORKSHOPS FOCUS ON NEW TECHNOLOGY

By BOB FISHER

Conference stresses what filmmakers have to learn in order to remain competitive in a world where viewers are more media-wise than ever

Robert Scott looked over the audience at the first of 11 workshops at IFPA's 1981 Conference and CINDY Awards Banquet. The events were held at the Sheraton Universal Hotel, in Universal City, October 30th to November 1st.

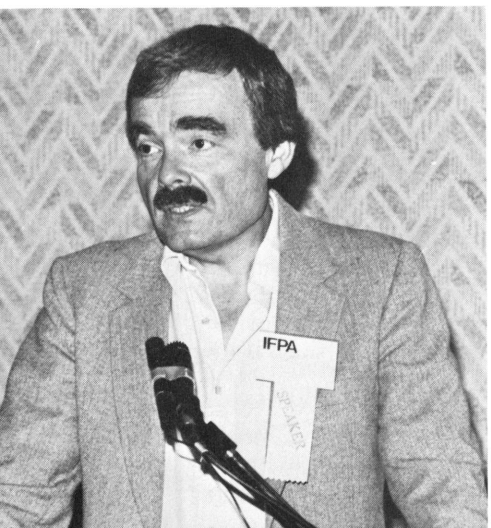
"Today's filmmakers are supposed to know everything," Scott said. After waiting for a minute or so for the meaning of that opening statement to sink in, Scott added, "But, there is a lot that we just don't know."

The former IFPA (Information Film Producers of America, Inc.) President was speaking from the perspective of 30 years experience as a producer of documentaries and other information programming for the U.S. government and private industry. Scott managed to film production programs documenting the nation's early space efforts, and from 1973 through 1977, he was director of Motion Pictures for USIA.

The workshop that Scott led focused on "the significance of informational audiovisual communications in this country and abroad," however, the speaker also recalled the beginnings of IFPA in 1957. The objective then was to create a community of filmmakers who could share experiences and knowledge, Scott said, peering into an audience of some 100 film and video producers and other audiovisual communicators who made it up in time to attend a 9 a.m. workshop on a Saturday morning.

"The survivors are here," he told the audience before leading into a discussion of what filmmakers have to learn in order to remain competitive in a world where viewers are more media-wise than ever before, and the technologies for production, editing and delivering are changing at a breathtaking pace.

At IFPA Conference Dave Bell of Dave Bell Associates, Los Angeles, discusses the filming and selling of documentaries for television.



Lessons in survival continued through the several days of workshops with topics ranging from the impact of new high-speed color negative films which are providing producers with new opportunities for creative expression, to an in-depth state-of-the-art report on the fast-emerging technology for transferring images originated on motion picture film to videotape for post-production and/or distribution.

Other workshops explored research in depth perception of color photography and the effect this has on how viewers see films, the ways that film design can influence audiences, and the psychology of media design. In addition, there were sessions which probed along the frontiers of new technologies for transferring slides to film and for using computers as aides in film and video origination.

David Bell captured everyone's attention at one workshop which focused on making and selling documentaries to television when he discussed the potential impact of the "new media"—cable and pay TV. "The horizons for documentary producers are brighter than anytime I can remember since I got into the business," said Bell, who also described the making and selling of two hardhitting films to Home Box Office.

In another workshop, the spotlight fell on Stephen Low, who described the making of a Gold CINDY winner—*Challenger: An Industrial Romance.* The documentary which Low produced, directed and narrated won the IFPA Best of Show Award in addition to a Gold CINDY in the documentary competition.

Low told how an item he read in a newspaper about Canadair launching a multi-million dollar project to design, build and sell a new corporate jet, The Challenger, sparked the idea for producing the documentary.

Low shared the platform with John Robinson of Canadair, who recalled management's reactions when they were approached with the idea of making a documentary for initial release on Canadian television. "We had made industrial films before; however, this was something different," Robinson admitted. "Stephen wanted to document how we were coping with the pressures of living with a multi-million-dollar gamble. We had to sell The Challenger to many buyers while we were still in the process of creating it. Because of this there were inevitable conflicts between the people marketing the new airplane and those designing and building it. Stephen wanted to tell the story of how those conflicts were resolved."

Eventually, Canadair officials warmed up to the idea, and the Canadian Film Board decided to sponsor the project. *Challenger: An Industrial Romance* was in production for more than a year. In addition to playing on TV in Canada, 30 and 60-minute versions are being sold for use in motivation training programs.

All of the CINDY film winners in more than 30 categories of competition were on view at the three-day conference. "The main purpose of the CINDY competition is to recognize excellence in film, video and other audiovisual productions in order to help establish standards," says IFPA Executive Director Wayne Weiss.

IFPA has some 1,100 members across the country who are either independent or in-plant film, video and audiovisual producers. "The annual CINDY competition is open to all producers," said Weiss.

Preliminary judging was done by members of individual IFPA chapters and subject experts. Finalists were judged by a blue ribbon national panel. All CINDY winners were honored at the awards banquet emceed by Los Angeles TV newsman and KNXT co-anchor Jess Marlowe.

The Best of Show CINDY was given to Low by Robert Woolman, Director of Audiovisual Markets Development for the Motion Picture and Audiovisual Markets Division of Eastman Kodak Company. Kodak sponsors the CINDY film competition. "In viewing many of the entries at the CINDY screening sessions I was impressed by the imaginative ways you tell stories and communicate ideas with the raw materials Kodak provides to record images," said Woolman. "Beyond the creativity displayed by the CINDY winners, I was greatly impressed by the high technical quality of these presentations. This is what it takes—creativity and technical skill—to communicate in today's increasingly complex world. That's why we are pleased to sponsor the CINDY competition. We want to encourage excellence in both the technical and creative quality of informational films."

Woolman went on to tell the more than 200 guests assembled for the CINDY Awards banquet that Kodak is bringing two new films to the marketplace. Both films were introduced earlier during the

(LEFT) Stephen Low accepts Best of Show Award for his gold CINDY winner, CHALLENGER: AN INDUSTRIAL ROMANCE. Award was presented by Robert Woolman of the Eastman Kodak Company. Low produced, directed and narrated the award-winning documentary. (RIGHT) Winners (left to right) include Stephen Low, Jess Marlow, Mary Jane Terrell (NFBC) and John Robinson, Canidair Aircraft, Ltd. All of the CINDY film winners in more than 30 categories of competition were on view at the three-day conference.

same week at the annual conference of the SMPTE in Los Angeles.

Eastman color negative film 5293/7293 is rated for an exposure index of 250 in 3200 K tungsten light, however, Woolman pointed out that it has already been successfully tested by theatrical film cinematographers in Hollywood and New York at E.I.s of 500 and 1000. The film will be available in 1982 in both 35mm and 16mm formats, and Woolman predicts that it will allow cinematographers to work at substantially lower light levels.

"We believe that this will prove to be a real boon to documentary and other informational film prducers," he told IFPA attendees. "They will be able to save time and money by working with less lighting equipment and in many cases smaller crews. The ability to work with little and in some cases no artificial light should also have an important creative impact in that it will allow them to retain a sense of reality."

Woolman also pointed out that in many instances, non-theatrical filmmakers aren't able to set up lighting in natural environments. "If you are producing a training film in a factory, it isn't always possible to light the way that you would for a theatrical feature," he said. "The high-speed color negative will provide an opportunity to do this without sacrificing technical quality."

Eastman color print film 5384/7384 features improved dye stability without a price premium. "This print film will last for generations without noticeable dye-fading," Woolman said. "The actual life of the print film as far as its ability to retain original colors will be determined by how it is stored. If prints are retained in an environment of controlled temperature and humidity, they are obviously going to last longer."

The improved dye stability in the new print should be particularly important to users of IFPA films since many have long life cycles, Woolman pointed out.

The 1981 National Conference was kicked off by IFPA president Dick Wade, who recently organized an audiovisual production company (R. Wade Enterprises) in Spring Valley, California, after completing a 30-year photographic career as a U.S. Navy Commander. Wade reported that despite a downtrend in the economy, IFPA's membership has increased during the past year, along with the numbers of entrants in the CINDY and Audiovisual Department of the Year competitions sponsored by the orgnization.

IFPA intends to increase the exposure given to CINDY winners by creating a showcase for presentation to information and video film buyers and users to make them more aware of the importance of production values. Wade said that the showcase will benefit all IFPA members by promoting the value of excellence in informational film production.

Mike Gittinger, IFPA 1982 president-elect said that objectives for next year include reaching out to more film, video and AV producers who have a commonality of interests. "We feel that there is a real need for building a larger and stronger organization which can provide a forum for new ideas and act as an advocate for the profession as well as for members. The emergence of new technologies for producing and distributing informational programs in film, video and audiovisual formats is bringing all of these disciplines closer while establishing a need for higher standards," said Gittinger, who is employed by Kodak in San Francisco.

Following are workshop highlights:

Jerry McGarry of Eastman Kodak Company presented a visual program entitled "What we see is what we think." The program was an adaptation of some 30 years of research by Kodak's Ralph M. Evans on the topic of color perception. "Vision is in large part a guessing game," McGarry said, "and the guesses depend largely on a set of assumptions you make about objects—assumptions you make automatically and unconsciously."

McGarry's point was that images—still and motion—should provide visual clues which help audiences interpret what they are looking at. Motion picture images are two-dimensional, and show only part of the real scene. The perception of depth comes from decisions made by the viewer about foreground-background relationships, McGarry pointed out. McGarry illustrated how lighting, shadows, object sizes, focus and perspective can provide viewers with visual clues which help them interpret what they are looking at.

Henry Freulich, ASC, senior technical advisor to the Motion Picture Division of Fuji Photo Film, U.S.A., presented a demonstration of Fujicolor Negative Film A 250 Type 8528. The footage demonstrated the use of the 16mm color negative film in various situations without the use of artificial illumination.

Freulich said that the film, which is rated for an E.I. of 250, is being used in such situations as night exteriors, underwater, and for interiors which are either difficult or impossible to light. Many times you can't light in churches, museums or places like that because of potential fire hazards, he said. The use of a high-speed negative also makes it easier for producers to work at many practical locations such as department stores, factories and offices, he added.

Neil Kempt, product manager for Rank Cintel in the United States reported on trends and progress in film to videotape transfer technologies. Kempt reported that there are now approximately 60 Rank Cintel Mark III flying spot scanners in use in the United States and some 500 worldwide. He outlined the alternate film to tape

Continued on Page 96

A NEW MICRO-COMPUTER FOR OPTICAL HOUSES

By COLIN SPARKS

A multi-purpose micro-computer no bigger than a pocket calculator designed to cut optical printing drudgery by 200 to 300 percent

A new multi-purpose micro-computer has been developed which, its designers claim, can cut costly drudgery at optical printing and animation houses by as much as 200 to 300 percent.

The small keyboard, no bigger than an ordinary pocket calculator, and optional printer can be used in two different programs—for solving line-up problems and for calculation of camera movements.

It's designed to chop off 85 percent of the time usually needed to figure out line-up problems. In a job like line-up, where one mistake can cause weeks of delay and cost thousands of dollars in reshoots, the little box can practically eliminate all mathematical errors, claim developers Chris Dierdorff and Paul Jaffe.

As an aid in plotting camera movements, it can be used with an animation stand or optical bench to achieve the identical look of $50,000 to $100,000 worth of motion-control equipment, according to distributor Cinecomp of Santa Monica, CA.

No, "Rosebaud," as the unit is named, won't actually move the camera and artwork for the animation stand or optical printer operator. That's motion control proper. A computer generates mathematical curves for each axis of camera and artwork movement and then "walks" the stepping motors through those curves. With this system, a sort of human-assist motion control, the computer still plots out the requested curves, but the camera operator does the walking—no pun intended.

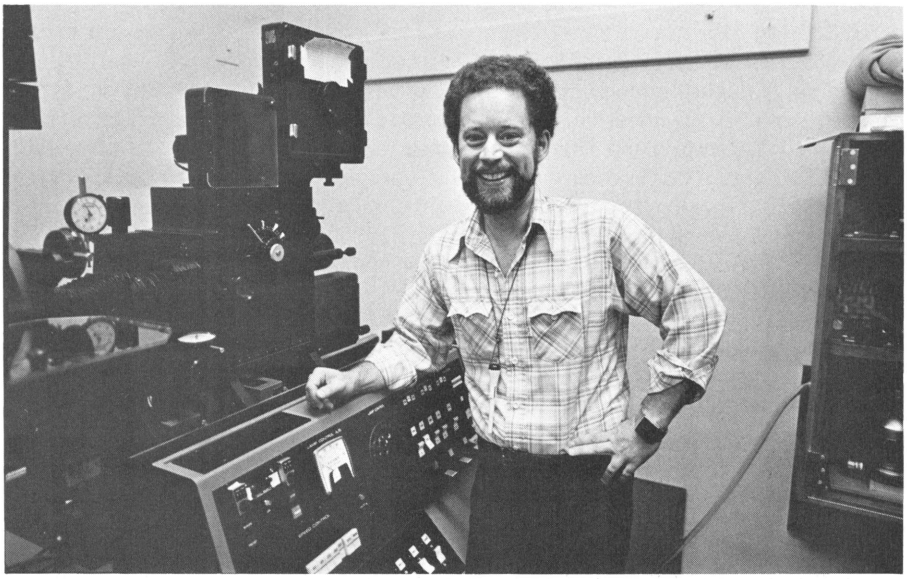
Hollywood-based Cinema Research Corporation (CRC), one of the oldest optical houses in the country, has used the gadget on such major projects as: OUTLAND, BLOW OUT, THE LONE RANGER, BEATLEMANIA, THE GREAT DIVIDE, FOR YOUR EYES ONLY, S.O.B. and THE GREAT MUPPET CAPER, says Peter Donen, CRC vice-president and creative director.

"The basic thing that it does is save you a tremendous amount of time," Donen explained. "And because it saves so much time, it allows us to produce more complicated moves for more clients."

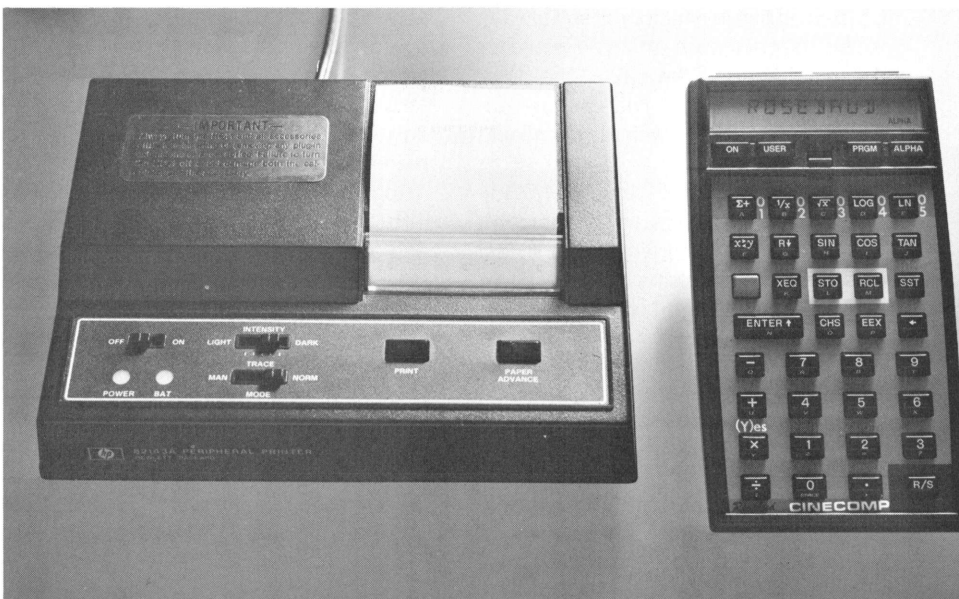
Added Ernie Arcella, who originally began with CRC and has been its animation cameraman for 34 years, "It's a great thing to have ... Makes my life a whole lot easier. I wish I'd had one of these 20 years ago. It would have saved me a lot of time."

Bill Taylor, Universal Studio's matte department Director of Photography, independently developed a similar system along with his friend, math-whiz Keith Robinson. That system, designed for their personal use only, is admittedly "less sophisticated" than Cinecomp's but, Taylor says, it's still "an enormous time saver."

"Ten minutes versus eight hours ...



Bill Taylor, Universal Studio's matte department Director of Photography, says that Cinecomp's program has saved thousands of dollars and chopped days off the schedule in the six months that he has been using it. (BELOW LEFT) Cinecomp's pocket-size ROSEBAUD micro-computer. (BELOW) The ROSEBAUD micro-computer with optional printer.



That's a hell of a percentage," he added. "A program like Cinecomp's has already saved me thousands and thousands of dollars—chopped days off the schedule, and I've only been using it for six months.

"It has been invaluable. The users have been pretty enthusiastic. I mean, Al Whitlock, my boss, sees that the moves are much better now. There are no glitches in them from human error, from writing down the moves. The Cinecomp programs do what mine do and more. Believe me, if I had known that their programs existed, I wouldn't have invested all the time and effort in developing my own. Theirs is much more sophisticated."

Cinecomp's unit can aid camera operators doing either pans or zooms.

Besides figuring out pan runs in about a quarter of the time it would take with a "normal" pocket calculator, it provides the operator with a print-out of all the numbers and steps. The operator doesn't have to write it out in longhand as he figures it out. The print-out can be referred to during shooting. The gadget also keeps accurate track of camera-specific frame counts, Cinecomp claims.

But, one of the main advantages of Rosebaud in either its pan or zoom function, is its programmed ability to compute mathematically-perfect in-and-out cushions, Jaffe pointed out.

"Most industry people have to do inaccurate cushions," he explained. "It's either because they don't have the time to spend figuring out the complicated mathematics involved or really don't know how ... Sometimes it's a combination of the two. When you wing it, for whatever reason, you're bound to get jerks and jolts of some kind."

With Cinecomp's gadget, Jaffe insists, the operator can simply punch in the data and end up with "a smooth, mathematically-perfect in-or-out cushion."

Continued overleaf

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0:9   3.11   100.00

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3:9   3.14   123.93

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6:9   4.01   161.52
7:9   4.02   174.05

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2:9   3.13   102.67
3:9   3.14   106.54

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6:9   4.01   133.92
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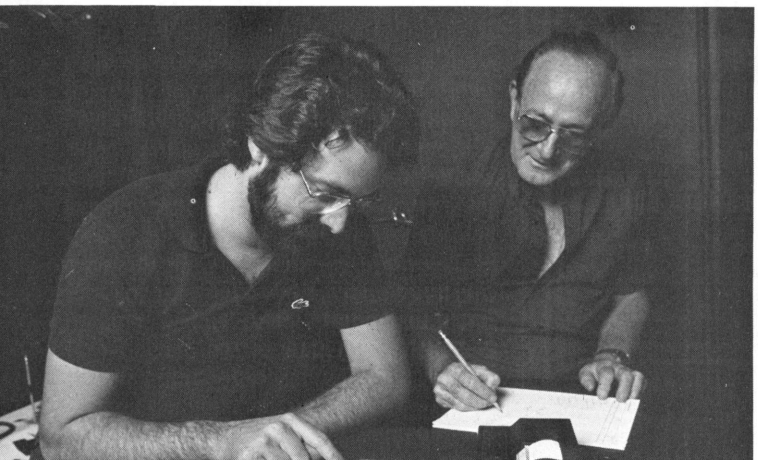
(ABOVE) Examples of ROSEBAUD's camera-ready printouts, as provided by the optional printer. (BELOW LEFT) Peter Donen, vice president and creative director of Cinema Research Corporation, works out a problem with the ROSEBAUD micro-computer, while Ernie Arceila, who has been CRC's animation cameraman for 34 years, takes notes. (RIGHT) Arceila uses ROSEBAUD printout to make a shot on the animation stand. ROSEBAUD handles a wide range of camera configurations and counter systems.



BLACK DOT

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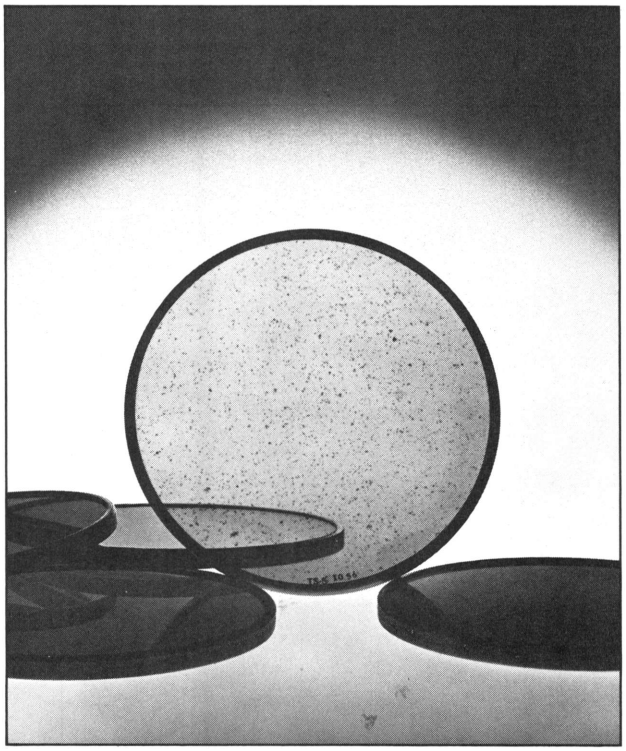

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"It's easy, besides," added Dierdorff. "You don't need to be a computer whiz to operate it. If you can use a pocket calculator, you can learn to use this."

"Of course," he added, "anytime you want cushions in the zoom function, you have that, too." More importantly, Cinecomp claims the gadget can plot the compensating zooms of your choice. Without expensive motion-control equipment, compensating zooms used to hold more mathematical terror for cameramen than calculating cushions. With a compensated zoom, the artwork won't appear to speed up as the camera gets closer to it, according to Dierdorff.

More pluses in Rosebaud's favor, Cinecomp claims, include its ability to handle a wide variety of camera configurations (animation stands, optical printers) and counter systems (micrometers, digital). It also graphs curves to help the operator visualize the move.

Since the gadget can go back and forth between digital counter and micrometer reference points, it can easily go back and forth between animation stands and optical printers.

"It's not necessarily dedicated to any one machine," Dierdorff explained. "It's set up to be general purpose. It's small and portable. You're not tied to one machine. You can just switch from an animation stand to a printer any time you want."

"The whole trick of this machine," Donen offered, "is in getting used to working with it ... Getting friendly with it. It just takes fooling around with it a lot ... Like anything new. The first month we had it, we maybe used it three times; the second month, maybe 30 times. The third month, we used it on every move.

"It really does nothing more than a guy with imagination, a piece of graph paper and a compass could do. It's no panacea. But it does a lot of things faster than the guy with the imagination could ever do.

"It gives you your numbers. You don't really have to think about that side of it anymore. You can think about being creative. There's little chance of human error because you're just reading a series of numbers and shooting. All of the imagination then comes into the design of the move, as opposed to the execution of the move."

THE DESIGNERS

Cinecomp, a.k.a. Jaffe and Dierdorff, didn't start out trying to devise a saleable system. Both worked in Hollywood optical houses. Dierdorff was used to spending four hours plotting a complicated move by hand. Jaffe spent much of his time muttering about similar problems in a building

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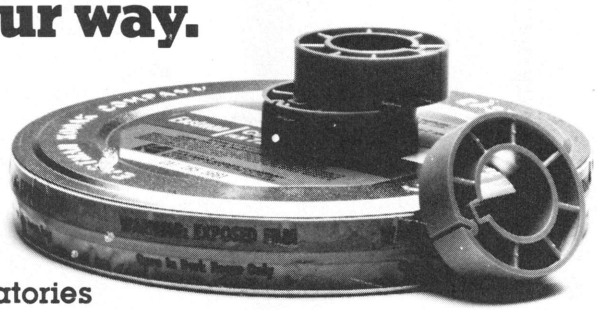

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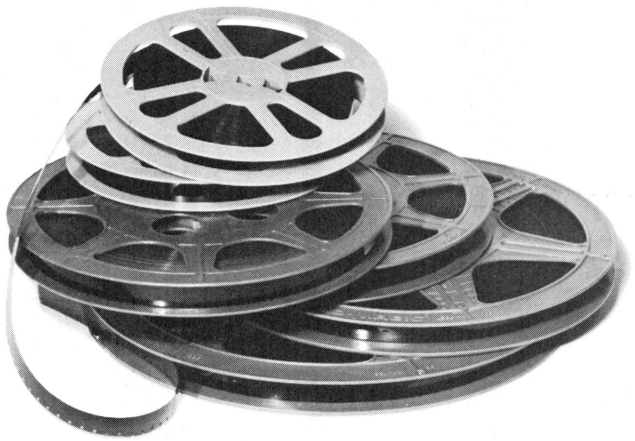

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not far away. By chance, the two got together. After getting bored listening to countless retellings of mathematical horror stories, they decided there had to be a better way.

Jaffe came up with the idea of programming some kind of small computer or calculator to shorten the time needed to calculate camera moves and to simplify line-up math tasks. Dierdorff kept adding more applications to the original idea.

"Fortunately, I'd had some experience in programming," Jaffe recalled. "But, I never expected that the programs would take so much time to figure out as they did. We'd spend weeks figuring out one specific application only to find that it wasn't able to handle all the variety of situations that kept popping up."

Finally after about eight months they had programs that did everything they wanted and then some. When they got to the point of actually using the programs in everyday line-up, pans and zooms, they couldn't believe the amount of time being saved.

"We originally worked it out for ourselves, like Bill Taylor did," Dierdorff recalled. "We wanted to save ourselves a lot of aggravation, so that at the end of a day we wouldn't be walking around like zombies. But, it quickly became obvious that others could benefit from it, too."

There were still a lot of little quirks to the systems that Dierdorff and Jaffe had become accustomed to through months of using the prototype calculators—quirks that made the prototype far from the marketable and professional model offered now.

"We had the whole thing memorized because we wrote and designed it, of course," Jaffe explained. "But it would have taken us two months to explain a program like that to someone else."

Back to the drawing board.

Another four months and they had the basic structure worked out. They spent another three months trying every conceivable permutation to get the machine to "screw up."

They had a saleable product. Or so they thought.

The first problem was trying to convince the camera operators that the gadget would really save them huge chunks of time.

Most were "a little apprehensive about it at first, to say the least," Jaffe said. "It was the whole computer stigma."

"But once they saw that it was a hell of a lot easier to operate than actually figuring out the whole thing by hand," he continued, "they loved it."

"Most of the initial resistance came from the proverbial 'front office,'" Dierdorff

added. "Why should they be paying for something like Rosebaud when employees had figured out the processes in the same time-honored tradition for decades? After a while a few cameramen started harping its benefits to their bosses. We sold our first machine."

Both Jaffe and Dierdorff point out that the machine isn't a "world-shaking discovery."

"It does what it's supposed to do," Dierdorff said. "It saves an amazing amount of time. It does a few things that you couldn't do by hand without a doctorate in physics, but that's really not the point."

Donen agreed: "It's not a panacea, as I said before ... But then there isn't anything that could be said to be a panacea. It's very useful, a very worthwhile investment. It didn't cost us a lot of money. Within a month, I would say it paid for itself in throughput ... In the fact that matched moves that have to work within a certain number of seconds or frames can be done immediately. Complicated moves can be plotted out quickly. It might take two or three months to pay for itself at different houses. It isn't that expensive a piece of equipment when you're already looking at millions of dollars of hardware standing around at these companies."

LINE-UP

Using a whole other set of programs in the basic micro-computer for line-up problems, the operator can:

—Add, multiply, subtract or divide within any one of six film bases (35mm, 16mm, 16mm edge numbers, frames, Super-8; hours, minutes, seconds (frames)). For example, one 35mm length can be subtracted from another.

—Convert lengths from any of six film bases to an equivalent in another film base, i.e. convert a 35mm foot and frame count into an equivalent 16mm edge number count.

—Determine the sectional length of the film by computing beginning and end counts, then add that on to the beginning count of another section of film while maintaining the count integrity of the film base for each section.

—In any film base, by knowing the total "synch-to-synch" footage, find any frame count from the tail end of the film even if that frame count had previously been arrived at from the head of the film. ■

IT'S QUIET, BUT NOT *THAT* QUIET

In the article on "THE NEW GENERATION GSMO 16mm CAMERA", which appeared in the December 1981 issue of *American Cinematographer*, a typographical error on Page 1235 indicated a sound level for the camera of *20 dB max*. The line should have stated that the sound level for the "new generation" GSMO is *28 dB max*. on the weighted "A" scale.

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PAINTING SHARKS UNDERWATER: A CINEMATIC ADVENTURE

Intrepid film crew shoots in a tank full of sharks, as artist creates closeup portraits that give the term "wet paint" a whole new meaning

David Haylock Productions were challenged when they received a phone call asking for special camera equipment and technicians to film the story of Rick King.

King, an underwater artist, takes his oils and easel underwater during shark feedings—and comes up with paintings of sharks.

Haylock Productions called on Steve Ciffone of Image Devices rental department to quickly custom design a camera rig that would allow filming by remote control of the sharks feeding and the artist at work in their midst. Filming was set for one day away.

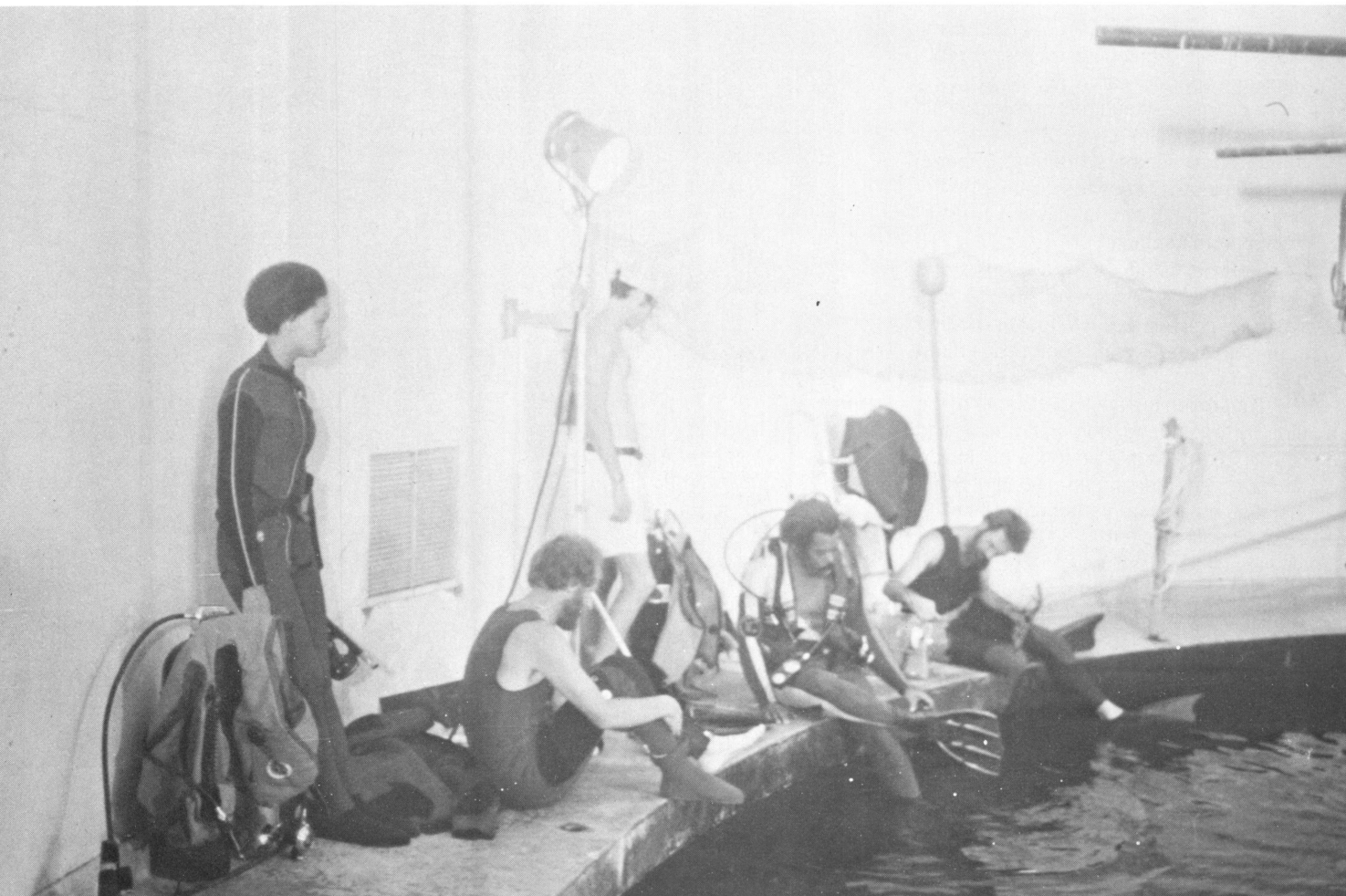
Ciffone's IDI engineering department went to work on the problem. Two 8-foot microphone booms were taken from the sound department and specially fitted with rings and supports. This would allow the cameraman, barely above the tank on a motorized scaffolding, to have vertical and lateral control lowering an IDI ACL-4 underwater camera housing inches away from the feeding sharks' jaws.

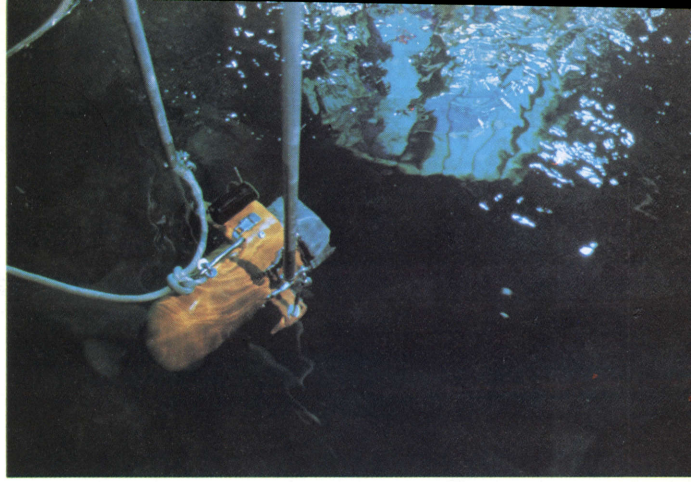
Within hours, David Haylock Productions' crew was on a flight to Orlando. Early the next morning before Sea World opened to the public, film was rolling.

Thirty hungry bull sharks (including 10 foot browns) reacted at once to ground-up fish thrown into the 600,000 gallon Shark Encounter tank. They charged at the submerged cylindrical shark-cage. Inside the cage, Rick King worked away on his canvas—well away from the bars. Several sharks chewed at the camera housing—one nine-foot sand tiger opened his mouth to swallow it whole. The 5.9mm Angenieux lens inside the 16mm camera housing recorded it all.

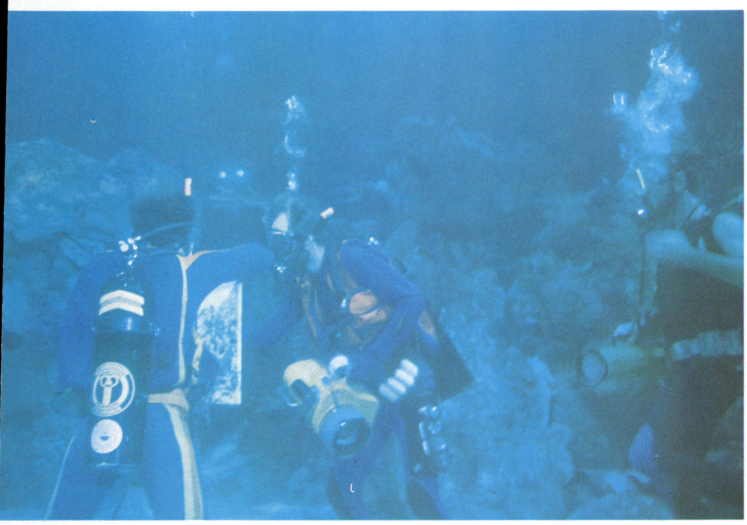
In another Sea World tank, the 150,000 gallon World of the Sea, the Haylock crew shot footage from the point of view of the

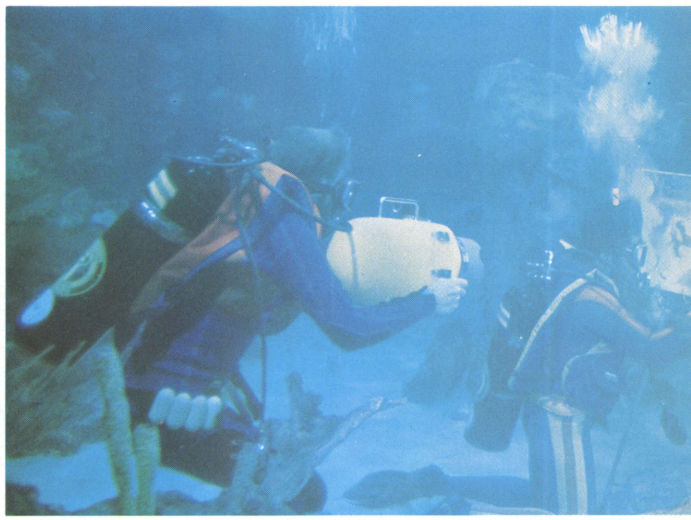
(RIGHT) A nine-foot sand tiger shark attacks the underwater camera housing which contains an IDI ACL-4 camera, in an attempt to swallow it whole during filming in Sea World's 600,000-gallon Shark Encounter tank. (BELOW) Suiting up on the edge of the Sea World tank in preparation for filming artist Rick King at work underwater.



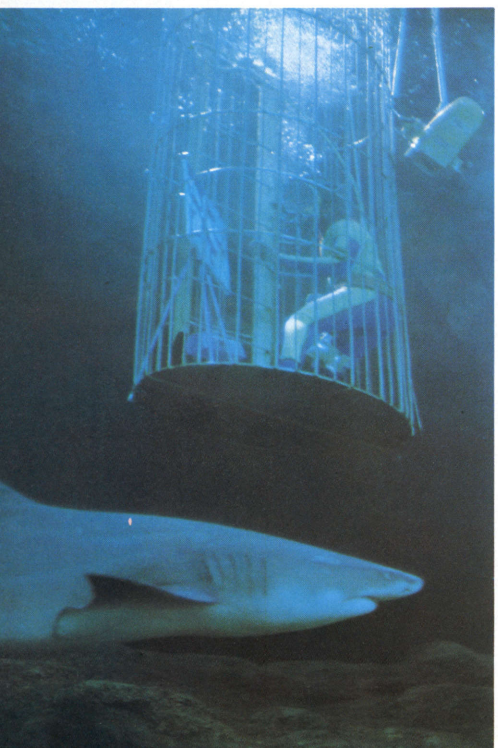


(LEFT) About ready to go for it, this jolly group includes Bob Pellegrini, Rick King, Mrs. Rick King and David Haylock. (RIGHT) Haylock Productions called upon Steve Ciffone of Image Devices rental department to quickly custom design this camera rig that would allow filming by remote control of the sharks feeding and the artist at work in their midst. (BELOW LEFT) Rick King painting, David Haylock with underwater camera, Bob Pellegrini with lights. (RIGHT) Haylock films an over-the-shoulder shot of King at work.





A sinister denizen of the deep glides by under the cage which holds Rick King, busily painting away to record sharks in their many moods.



artist and from the point of view of Mr. Bill.

Mr. Bill is a 13-foot sawfish, largest and most popular of the 600 tropical reef specimens in the tank. Since he could be dangerous—the underwater cinematographers with Rick King lowered themselves quietly to the bottom by deflating their buoyancy compensation vests, using flippers as little as possible. They settled into position, took readings and started to shoot. They used the same ACL-4 underwater housing (with custom poles removed).

By this time hundreds of Sea World spectators had arrived and they watched the filming. Mr. Bill watched, too. He rested his bladelike snout with teeth along both sides of the bottom of the tank.

That is, until the photography session was over and David Haylock and Bob Pelligrini used their flippers to swim away to the surface.

Mr. Bill's sawlike bill swung from side to side in characteristic effort to stun his intended victim/food. The three men emerged, safe, to paint—and film—another day. ■

The painting takes shape. A seemingly whimsical way to work, this method assures the artist of authenticity in his depiction of the sharks.

OF MINIATURES, MATTES AND MAGIC
Continued from Page 55

consequently could not be photographed under motion control. Not only would these shots have to be done "live," but tests showed that a frame speed of 32 to 48 fps was necessary in order for the blowing sands to appear convincing.

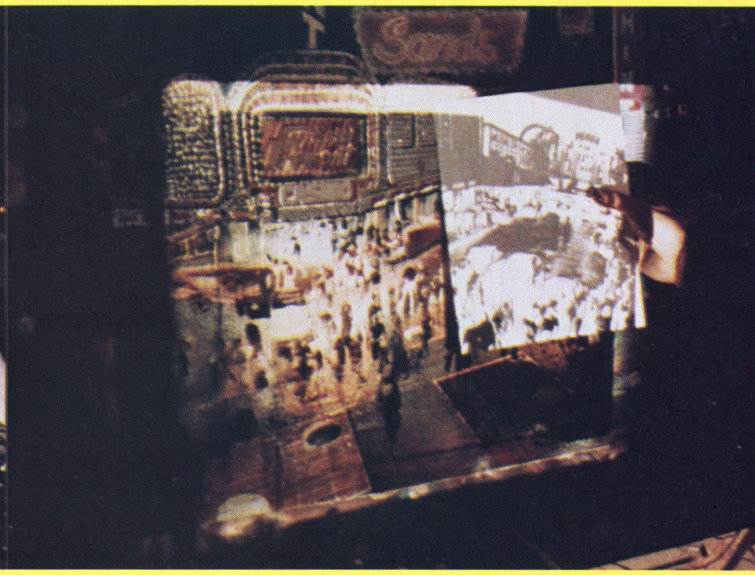
The most complex of these shots took place at night with the camera dollying through the desert looking down following a man's and woman's footprints. As the camera follows these prints we hear a slow, meandering love song, "Empty Pockets," *sung by Crystal Gayle and Tom Waits. Crystal's voice is heard over the woman's footprints and Tom's voice over the man's with the song turning into a duet as we see both sets of prints together. First we see the man's prints which leads us to the woman's. They walk together for a while and then split up. We follow the woman, who eventually leads us back to the man, who is now barefoot. They walk together and we notice that the woman is now barefoot. And so on until we tilt up and see the paired foot-prints trailing off to the horizon. Throughout the shot blowing sand is slowly filling in and eroding the shape of the footprints.*

It was very important to have total control over the timing of the dolly move, and the choreography of the footsteps as well as the look of the blowing sands. And, of course, once a take was done, all of the prints were filled in with sand and had to be reset with as little delay as possible.

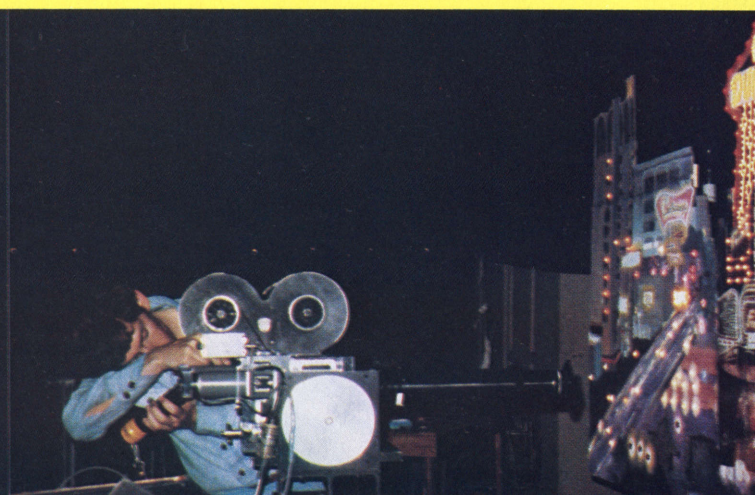
Had we used full-size footprints, it would have required much too complicated a crane, wind and lighting set-up. After several tests, we settled on footprints that were scaled down to three inches in length. We used very fine grain sand so that the prints would appear in realistic scale even when photographed close-up. Greg Jein carved sets of male and female shoe prints and bare feet out of styrofoam and stamped them into the sand.

We decided to do a straightforward dolly move and let the footprints wander in and out of the frame. Since the camera was pointed down and not able to see a horizon line for reference, it was possible to create the feeling that the camera was actually curving and wandering with the prints, rather than moving in a straight line. To vary the frame size we used the zoom rather than the boom arm. This also saved any complicated follow focus. The combination of dolly forward while zooming back gave an unusual perspective shift to the end of the take.

We chalked out an area on the stage floor 15' wide and 50' long with a center line drawn in. Sighting through the camera and dollying forward, we chalked out the paths that the prints would follow.



(LEFT) Hoyt Yeatman holds a white card in front of projected image to check alignment of film clip with painted background. (RIGHT) A live-action frame of the Fremont Street set for rotoscope is projected up on background painting. (BELOW LEFT) The background for the composite scene, with incandescent lights burning and motion control camera in the foreground. (RIGHT) A profile of Dream Quest's Mitchell Standard camera with the 16-inch-long Preston Snorkel attached. The rig employs a 20mm lens.



Once that was perfected we pasted cut-out paper prints on the floor and shot tests to determine the best dolly speed and down angle.

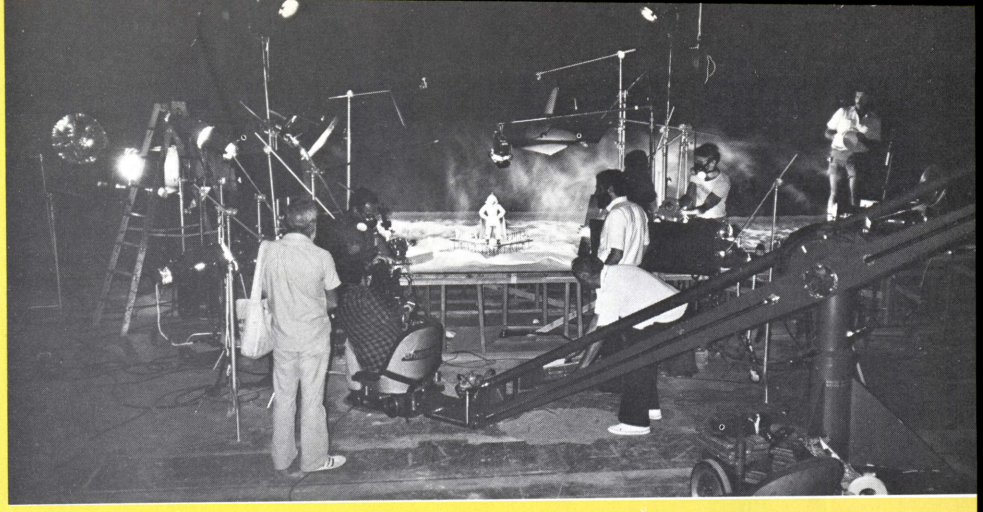
Looking straight down didn't give much of a feeling of the direction the camera was going. With too shallow a down angle you don't get a good enough look at the detail in prints. A 38+ angle worked best. The move had to be very slow to prevent strobing.

I wanted a low raking "moonlight" effect for this shot. To get the best coverage as well as maximum intensity for depths of field I decided to use six arcs.

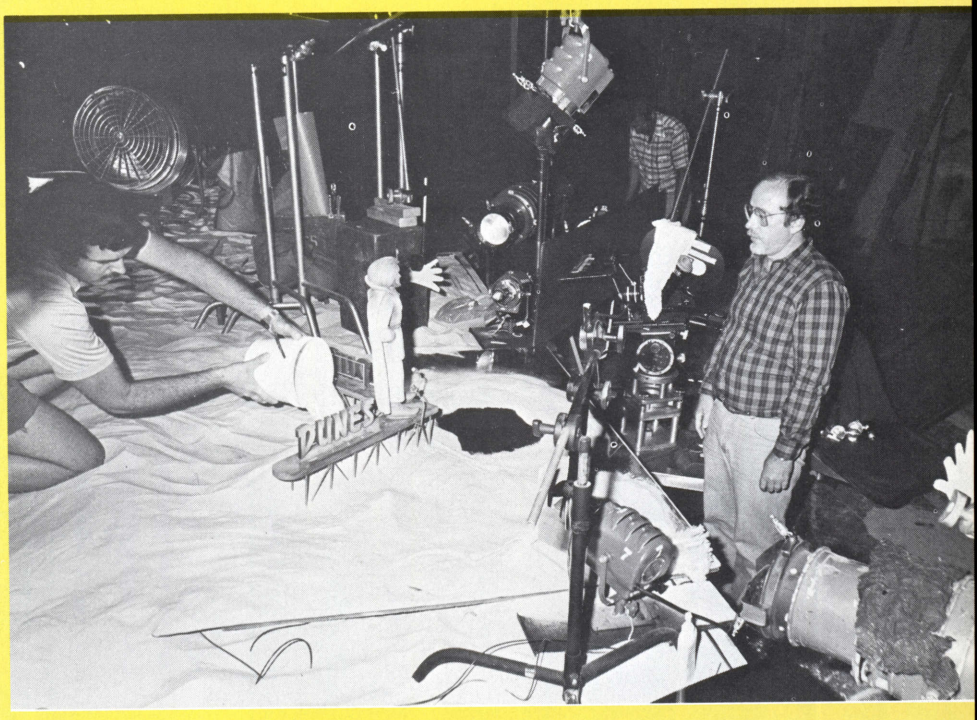
We built a table top 15' x 50' and 3' off the ground. It was covered with four tons of sand. The six arcs were lined up on one side of the table. Chapman crane tracks were run along the other side and the Zeus crane arm swung in over the center of the table. Four Ritter fans were at the far end of the table blowing sand across the table.

The crane arm was also used to position the model markers over the table to sculpt the sand dunes and the layout of the footprints.

Video pick-up was used on the film camera so we could be sure everything worked. Once the fans were properly adjusted to create the right wind effect the shot was done without a hitch.



Jim Lavin deftly maneuvers the Zeus crane past the Dunes Hotel "Genie" sign miniature, while Joe Digatiano (far right) supplies the blowing sand. (BELOW) The Dunes Genie getting another bucket of sand. Some of the miniature signs, such as that for the Golden Nugget Casino, contained as many as 2,600 tiny bulbs.

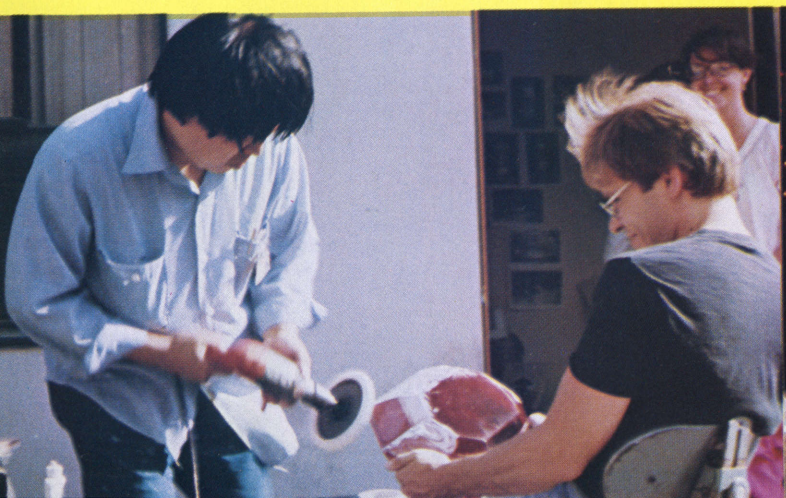


SWARTHE:
LITTLE BOY BLUE

A few weeks into production, we were asked to come up with a way of presenting one of the musical sequences in the film. Frederic Forrest as Hank, wanders sadly up to a huge neon sign called "The Blue Lady." As

Continued on Page 90

(LEFT) Nick Seldon holds on tight, while Miniature Supervisor Greg Jein polishes a "ruby ring" for use in an effects transition. This is a rare exterior view of miniature effects people at work. Jein's crew worked on the project for nearly a year. (RIGHT) Scott Squires programs a camera move on Dream Quest's Z-80 micro-computer. The sequences requiring the most visual effects are the opening of the picture and the *"Little Boy Blue"* musical number.



THE ELECTRONIC CAMERA
Continued from Page 29

The video system assembled for APOCALYPSE NOW was installed at one end of the room and modified to include two still-store (electronic slide projector) machines. Here editor Randy Roberts combined the radio play and storyboard illustrations on video tape, resulting in the first "real time" visualization of ONE FROM THE HEART.

The process for achieving this electronic sketch involved assigning numbers to each of the illustrations. The drawings were then committed to still-store disc via a video animation stand. Francis listened to the radio play and called out the number of the illustration that was to accompany it. By keying in the number on the still-store, Roberts was able to "insert edit" the images onto the tape. A video projector was provided to allow the tapes to be viewed on a 10-foot screen.

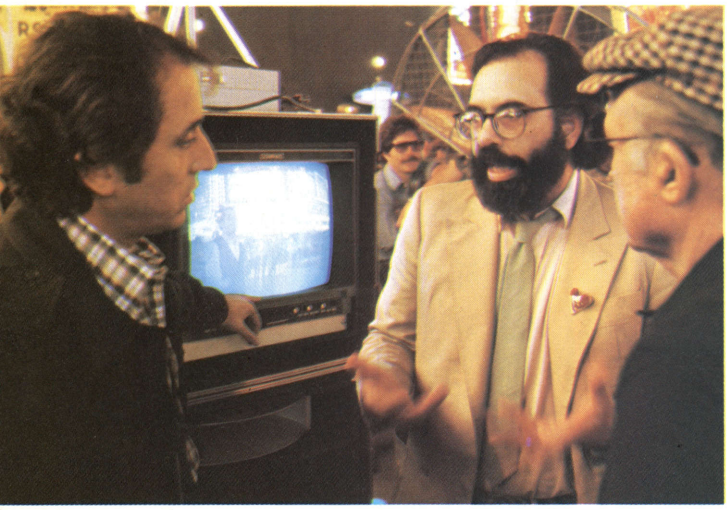
By this time actors were in rehearsal. Polaroids from these rehearsals began to replace the illustrations on the electronic storyboard, which was constantly being updated to contain the latest version of ONE FROM THE HEART. An added advantage to editing on tape was the ability to refer to earlier versions at will.

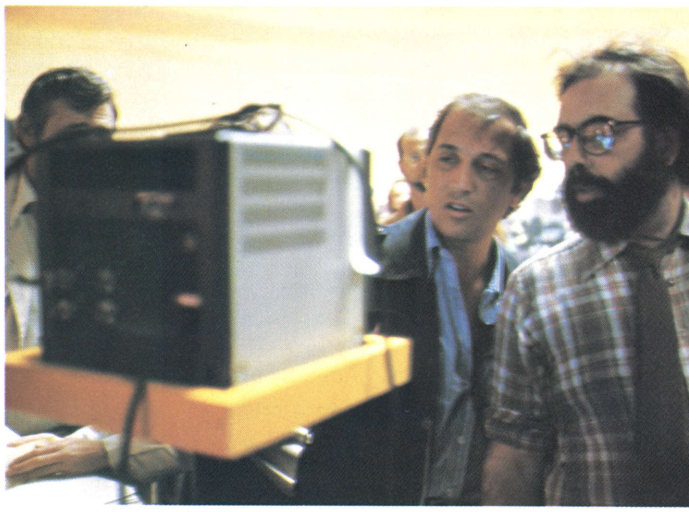
With this system the whole movie could be seen at any time. Previsualizing scenes that needed to be reworked or removed entirely from the film reduced the amount of film shot which taditionally would end up on the cutting room floor. The lines between pre-production, production, and post-production began to dissolve, as the electronic storyboard became the thread that connected these traditionally separate phases.

Next, Francis took the actors to Las Vegas for two days during which he videotaped the entire movie, scene by scene, utilizing real locations to give the actors a feel for Las Vegas, the setting of the story. As this taping was an extension of the rehearsal period, little attention was paid to detail. The Las Vegas footage was then edited into the electronic storyboard.

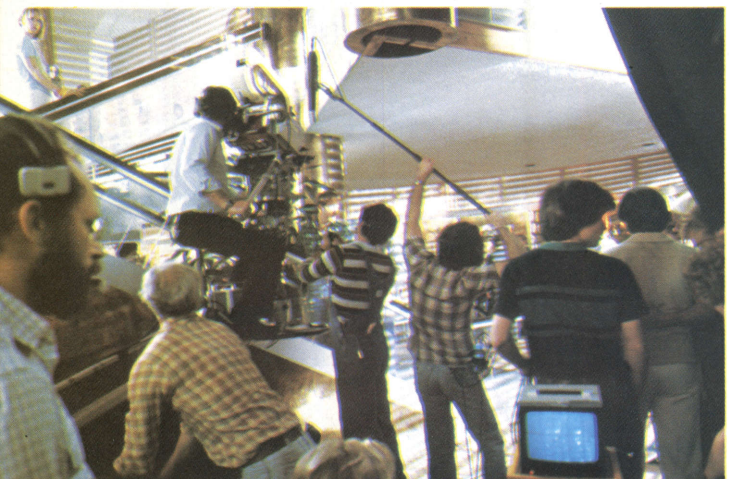
Meanwhile composer Tom Waits and his producer, Bones Howe, viewed the evolving tapes while writing and recording musical ideas, a process that would

Numbers were assigned to each storyboard illustration and then the drawings were committed to still-store disc via this video animation stand.





(LEFT) The stage electronics package, consisting of Sony Betamax recorders, monitors, speakers, switching networks and RTS intercom system, formed the "electronic heart" of the film's new production concept. (RIGHT) Storaro and Coppola discuss playback of videotaped scene appearing on the stage monitor. (BELOW LEFT) The video-assisted Technovision cameras were first brought out during technical rehearsals and connected to the stage package, allowing those watching to see exactly what the camera operator was seeing. (RIGHT) From the set actress Teri Garr talks to Coppola in his Image and Sound Control Center.



normally be relegated to post-production.

TECHNICAL REHEARSALS:

The next phase of rehearsals involved the setting up and testing of an elaborate audio/video network. Two significant new tools were introduced at this time: 1) the stage electronics package and 2) the Image and Sound Control Vehicle.

The stage electronics package, consisting of Sony Betamax recorders, monitors, speakers, switching networks, and RTS intercom system, formed the electronic "heart" of ONE FROM THE HEART's new production concept. As there were nine sound-stages in use for the film, we decided to install the equipment in road cases which could easily be rolled from stage to stage.

The video-assisted Technovision cameras were first brought out during technical rehearsals and connected to the stage package, allowing those watching the monitors to see exactly what the camera operator was seeing. The cameras at this point contained no film, but their video output was being recorded on Betamax along with scene and take information. These tapes were available for immediate editing and once again woven into the electronic storyboard.

During technical rehearsals, Vittorio Storaro was making use of a small portable black and white Sony camera as his electronic viewfinder. He walked through scenes holding the video camera and we'd record the output. Later, if desired, he could play back the tape for his camera operators. This viewfinder also helped him choreograph the more complicated moves that would later be executed by Garrett Brown with the Steadicam.

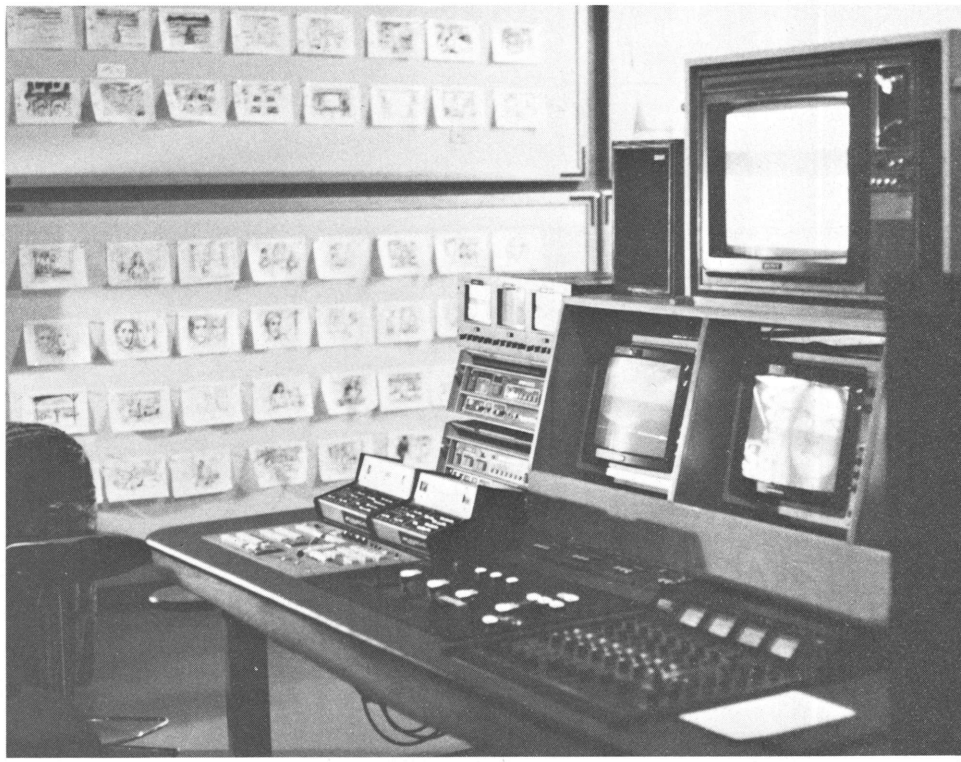
All the visual and aural information recorded by the electronic "heart" on the soundstage was fed simultaneously into the "brain" of the process—a custom-designed 28-foot motor vehicle built by Airstream and equipped by Centro to accommodate a complete off-line cinema video editing system comprised of a modified Convergence 103C Editor connected to four Sony SLO 383 Betamax recorders. Control Video Corporation "Intelligent Controllers" handled all time-code functions.

Related equipment included a Grass Valley switcher (for previewing optical effects), a Neve audio mixing console, and Edutron timebase correctors.

To rival the technological luxury of the vehicle, John Munderloh and his associates at Centro installed full kitchen facilities with an expresso machine, sleeping accommodations and a bathroom with Jacuzzi. Since Francis was going to spend a considerable portion of his life over the next several months inside the vehicle, its creature comforts were taken into consideration. When the completed vehicle finally rolled through the studio gates late one December evening it was greeted by the vigorous strains of Wagner's "*Ride of the Valkyries*" blaring over the studio P.A. system.

During discussions about the vehicle's design I had asked Francis if he felt directing from a remote location would isolate him mentally from his actors. He said he was going to spend extensive amounts of rehearsal time with them and much like the director of a play on opening night, he preferred to become the audience's representative and experience the performance from their point of view. In fact, scenes appeared on his monitor complete with music and effects which allowed him to see the scene as it would ultimately play. If needed, he could easily walk onto the stage.

The technical rehearsals were followed



(ABOVE and BELOW) The video system originally assembled for APOCALYPSE NOW was installed at one end of the "War Room" and modified to include two still-store (electronic slide projector) machines. Here editor Randy Roberts combined the radio play and storyboard illustrations on video tape, resulting in the first "real time" visualization of ONE FROM THE HEART.

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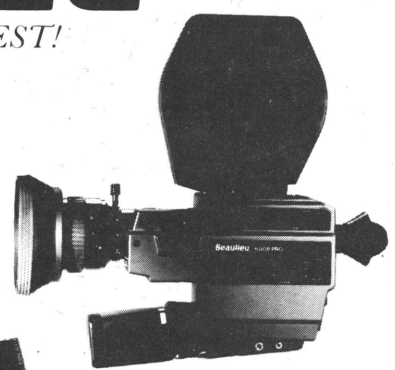

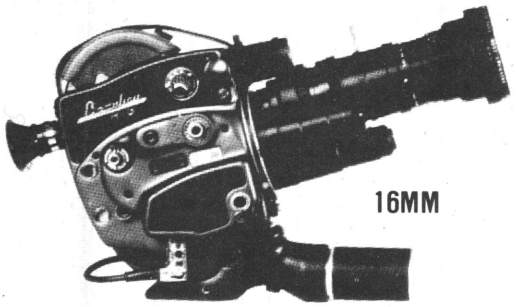

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by a week-long hiatus during which minor adjustments were made to the system, based on what we had learned during technical rehearsals. Although certain refinements were necessary, the basic design worked remarkably well. No major reworking of the equipment was required and once the minor kinks had been ironed out, ONE FROM THE HEART was ready to begin shooting. The system itself was flexible enough to allow Chief Systems Engineer Murdo Laird to reconfigure the equipment and adjust to any practical needs that might develop in the vehicle or on the stage.

SHOOTING:

During the shooting period, the full capabilities of the electronic system were put into use. Before a take, Francis gave instructions to his actors over the stage P.A. system or by intercom telephone. During the take, Vittorio Storaro watched the monitor to see what his operator was shooting. The gaffers watched monitors to get their cues when sightlines were difficult. Francis watched from within the vehicle and when the take was over, asked for an immediate replay that could confirm his evaluation of it. Vittorio could also ask for a replay on the stage monitor to check certain aspects of the shot he needed to see again. The decision to print was often based on these immediate re-appraisals on video, and this became a significant cost-saving factor. Not only could errors be immediately detected, but they could be corrected on the spot.

The film's technical crew got along well with the video equipment around them and were able to use it to ease their own jobs. They were also given a much more gratifying access to the image they were helping to create.

Once the selected takes were printed, Chris Weir transferred them to Beta and Umatic formats which provided color versions of the video-assist black and white versions taken during shooting. The transfer of film to tape was accomplished by the teaming of a Magnasync/Moviola Videola, a CEI 310 camera, a Control Video Corporation Intelligent Controller and Sony Beta I, II and Umatic VTR's.

During this transfer, SMPTE time code was added, including a readout of both video frame numbers and their corresponding film frame numbers, a concept developed by Clark Higgins to allow Francis to work freely in video at 30 frames per second and then translate that work into film frame numbers. Also multiplexed into the SMPTE time code on the tapes were scene, take numbers and roll numbers.

Meetings are now taking place between Zoetrope, Lucasfilm, Disney and others in an effort to standardize methods of reading and writing time codes.

One of the most interesting aspects of the electronic cinema system was its ability to provide simultaneous work-print material to the editors and sound designer working in auxiliary control centers which not only duplicated the capabilities of Francis' vehicle, but also created an important information link to it, feeding sound and visual mix material that allowed for an immediate test-cut within the vehicle. Like the stage equipment package, this control center could work independently of the other network centers, once the original material had been recorded.

As a result of the independent and interdependent functions of the three control centers, Francis was able, at the beginning of each production day to view an edited version of the previous day's shooting, complete with music and sound effects.

The first public screening of ONE FROM THE HEART was held in Seattle a month before the completion of principal photography. Instead of seeing "scene missing" cards for sections which hadn't been committed to film, the Seattle audience was treated to scenes from technical rehearsals. These never had been transferred from Betamax to 35mm (marking another Zoetrope first) and spliced into the previous version of the movie.

THE EDITING

For the editing process, which had been ongoing throughout the shooting phase of the film, a library was developed to organize the enormous amount of source material on hand—from storyboards, to rehearsal tapes, to actual shooting tapes—and make them rapidly available to those who needed them.

With the aid of a computer, Anahid Nazarian developed a system of immediate access to any material connected with ONE FROM THE HEART, eliminating the painful process of hunting down an obscure rehearsal tape, for example.

At the end of shooting, the editing process took on new definition because of the ability to easily duplicate the material. While the editors worked with one set of tapes, Francis could independently work on another. A special portable editing system was devised allowing him to transport in two suitcases his entire film in cassette form. One weekend, Francis went to Las Vegas for the NAB convention and edited

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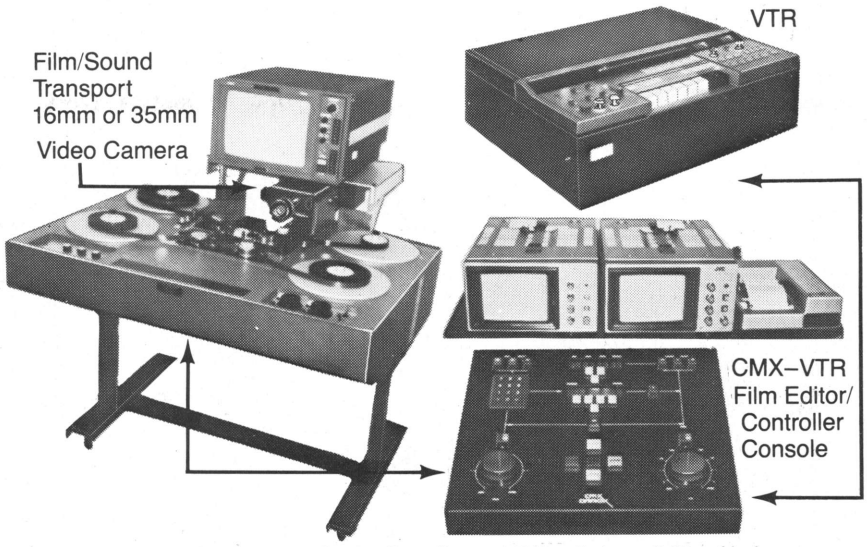
Computer-Assisted Film Editor/Controller



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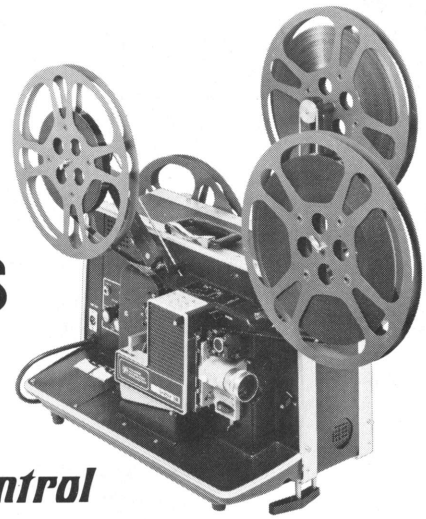

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VISUAL EFFECTS AS CINEMATOGRAPHIC ART

Continued from Page 33

preconceived sketched graphics. The scenes now committed to an action video brought the overall conception of the film-to-be to greater life and made for a sharper evaluation as to the needs of final cinematography.

Those areas of the production now seen as requiring specific effects attention could be determined and planned accordingly. After the same fashion as the general film production, a hastily vamped setting and cursory action could be quickly mounted, videotaped, and set into the master video of the film for a fast evaluation and a decision on whether to proceed in a certain manner for whatever transitional effects might be required. Following the video-sketch activity, a decision would be made as to the wisdom of securing whatever devices might be necessary for final cinematography be they front or back projection facilities, model or static matte procedures, effect mechanisms of travelling matte photography or in-camera effects.

From the outset of ONE FROM THE HEART it was decided to make as many in-camera effects as possible to avoid quality losses in duplication procedures and, equally, to effect a smooth transition between on-set scenes, using scrim and mirror techniques. By such means performance hiatus of actors were averted and the continuity of camera movement preserved.

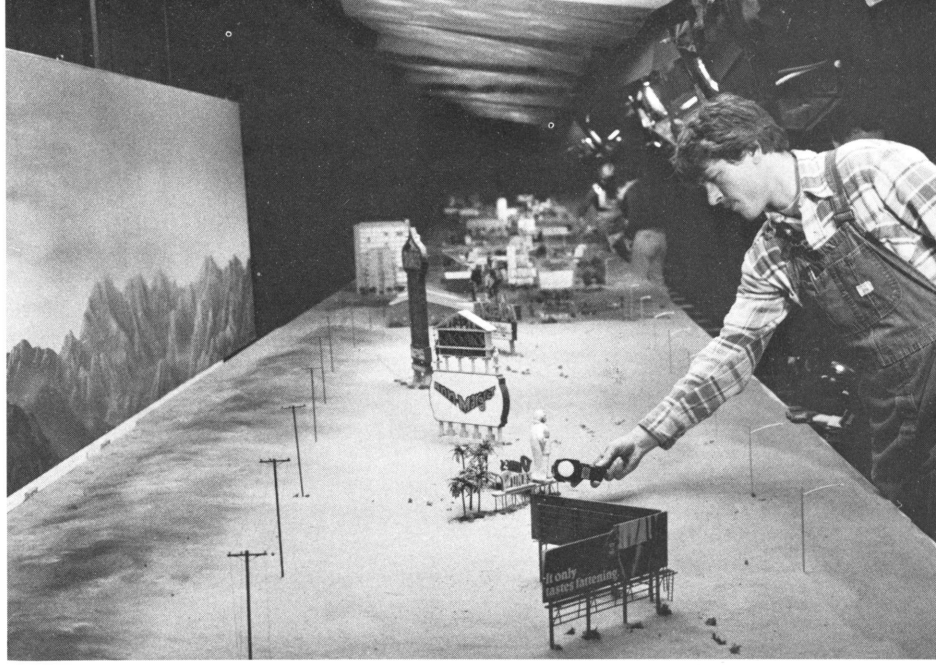
An adjunct to general stage operation is the use of blue screen travelling matte process cinematography. This method, which permits the addition of backgrounds to the foreground action of artistes in a duplication procedure, is fraught with difficulties, owing to variables in the original exposure which may be due to specular reflections, texture and color of materials or objects, uneven lighting etc., all of which must be anticipated and eliminated in the original photography. Up to the present time experience has been the best teacher and the lessons learnt arduously over many years of activity.

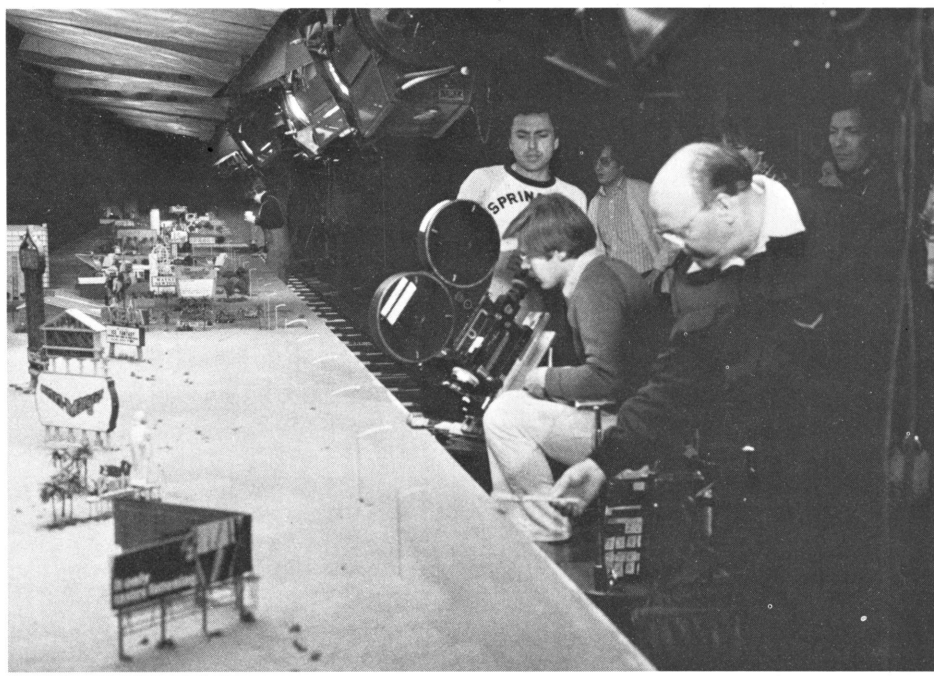
The use of ULTIMATTE applied to the video recorder permits the resolution of such difficulties in minutes. Through the immediate visual analysis of a scene in question, potential holes in silhouette masking are immediately apparent and totally eliminated before the exposure is made. Any resultant problems will not emanate from the original exposure but from the processing steps in duplication of the photographic image at the optical laboratory level.

The use of the ULTIMATTE was also an aid in the generation, via a ChromaKey backing, of previously shot rear projection plates and the true perspective alignment of those images to a foreground set piece. Since plane geometry is an exact procedure, the axis of a lens can be precisely calculated as to its proper position to match the perspective of a background to its matching foreground where a built set is involved. Where a foreground in motion is required an action can only be previewed by the camera operator. The rise and fall of the camera axis, speed slip of the crane arm, pan and tilt of the motion picture becomes subjective judgment of the operator and is not seen by the director until the dailies have been printed and screened at the laboratory.

By viewing the video at the ULTIMATTE monitor the composite scene can be viewed in all its activities and the stage effects such as wind, rain, light flash, jounce, bounce and twist may all be modified and adjusted to conform with what is observed to be the desired result.

In the past, those Directors of Photography unfamiliar with the rear or front process projection procedure found themselves confused as to the results of their exposure settings. A background expo-





Karl Herrmann checks the model for light balance. (BELOW) Wally Gentleman, BSC gives the lighting a final check before shooting begins. A meticulous planner, he does not agree with directors who regard such planning as restrictive. "There is no reason why this should be so," he says. "Ordered thinking does not need to be stereotyped deliberation and is no restriction on flexibility of intent."

sure was seen to be out of balance either in light or color. Use of the video tap to the camera as read on a stage monitor is a reliable guide as to exposure balance and color filtrations required for effective imaging. It becomes an immediate check on the validity of key and fill light angles and footcandle intensities.

It would follow that the use of the video camera during a scene prelight also demonstrates the validity of certain set lighting conformations without committing the result to motion picture film. In such a case a director may vet his pre-lit situation and exercise a firmer control over the lighting director's translation of what he thinks the Director requires for his effect and mood.

The video camera, in addition to its use as stage action blocking device, for which a camera viewfinder is normally used, has the ancillary virtue of instant recording and playback to analyse camera moves to everyone's view and the immediate approval of the director. When the actual taking camera is armed with a video tape then what is recorded photographically by the camera is simultaneously monitored by the video camera and can be instantly replayed on set for approval or rejection. Freed from such uncertainties, production may move surely into new set-ups before the advent of tomorrow's dailies from the laboratory.

In the construction of miniature sets the video monitor has been a definite asset, since the video camera can be set in the position later to be occupied by the photographic camera and model construction can continue with portable monitors attending the set dressers. This allows the technicians to view the progress of the overall construction without having to periodically move to the photographic station point. Where a crane scanning action is needed, then a rehearsal movement over

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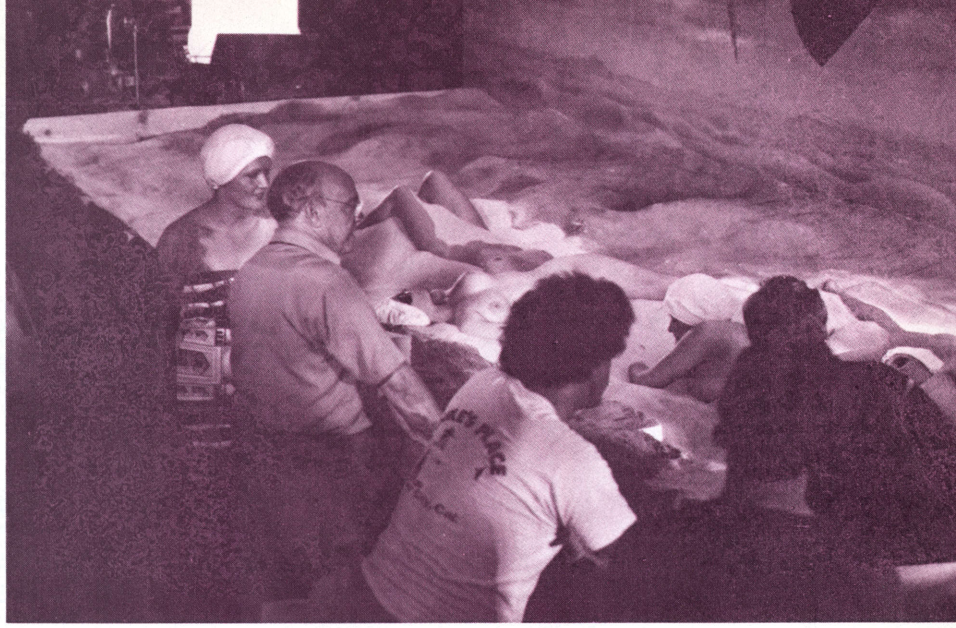
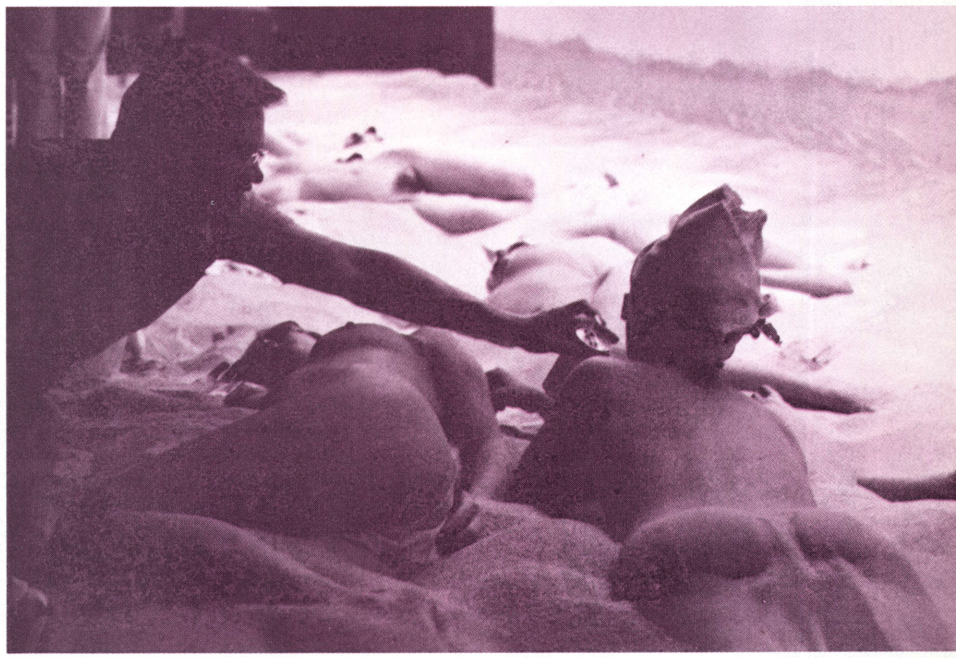


Nude models are carefully arranged and lighted in a huge sandbox for background projection plate to be used in experimental sequence depicting the desert as being a representation of the female—with the mountains as phallic symbols. (BELOW) The models were subjected to intense heat from lamps to get an exposure between f/11 and f/16.



(LEFT) Effects Director Wally Gentleman assists technician Ian Wayne in the preparation of miniature cloud glasses for desert dawn background plates. (RIGHT) Gentleman assisted by Karl Herrmann, lines up for a Louma Crane landscape trucking shot over female nudes. During the course of the scene the sand dunes change from natural desert contours to female contours and back again.

THE STEADICAM AND "ONE FROM THE HEART"
Continued from Page 45

by necessity, his stated passion is the discipline of light and image to the needs of the film; and his technique, however theatrically comprehensive, is subordinate to these larger pictorial ambitions. Not to mention that he's a charming highly civilized character.

These two very different figures managed to work together with a remarkable harmony of purpose, and put up with each other's varied obsessions with amazing fortitude.

PRODUCTION

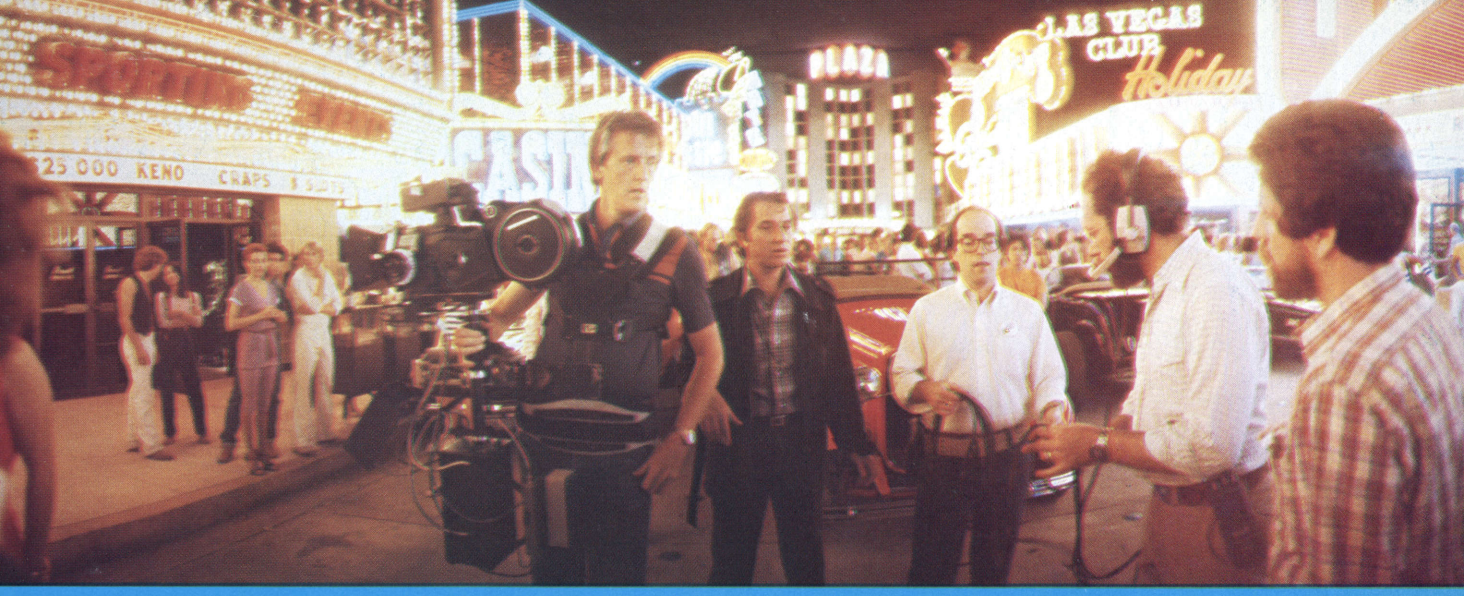
As production began, it was immediately evident that no amount of technical rehearsal could have locked up this movie once and for all, nor perhaps was it intended to. This is a highly organic style of filmmaking, and the number of options remained nearly as large as life itself. I think even after it's released I will be surprised to see exactly the same movie in any two different theaters!

Like all innovators, Francis risks failure by shouldering the burden of debugging his new technology for those who follow. On ONE FROM THE HEART his technical revolution is more or less underway. Even during final production, all takes were recorded on time-coded video assist, including mine, which were sent by wireless transmitter, and edits could be made immediately on ranks of Beta-maxes in the elaborate video van parked on the set. The immediate purpose again seemed to be to help decide what was really working and what the hell to do next. The ultimate purpose was to speed up the post-production by reference to the computerized edge-numbers shared by film and video alike.

From the van, Francis directed by spy-camera and live microphone and video assist and made his wishes known to actors and crew by huge speakers in the rafters or a complex intercom system. Sound effects and music cues could be instantly piped in. For better or worse, he generally refused to stay on the set as a "traffic cop." Curiously, in the midst of all of the gadgets, including mine, he still seemed able to concentrate on the performances from our excellent cast and the nuances of the story, despite the fact that even his quietest remarks arrived like messages from Olympus.

Vittorio managed to function with great spirit amid the reverberations from this sort of Big Brother remote-control, but I think he was happiest when Coppola could be enticed to the set. When Francis

(LEFT) Garrett Brown (in foreground) prepares to shoot Steadicam scene on the vast forced perspective downtown Las Vegas set on Zoetrope sound stage. (RIGHT) The Steadicam becomes part of the choreography on fast-paced dance number with Teri Garr and Raul Julia, coming up on minute three and impending trip up the crane. Storaro steers the camera and cues the dimmers. (BELOW) The view from the crane at the start of Steadicam shots on Dean Tavoularis' Las Vegas Street set outside "Hank and Franny's house".



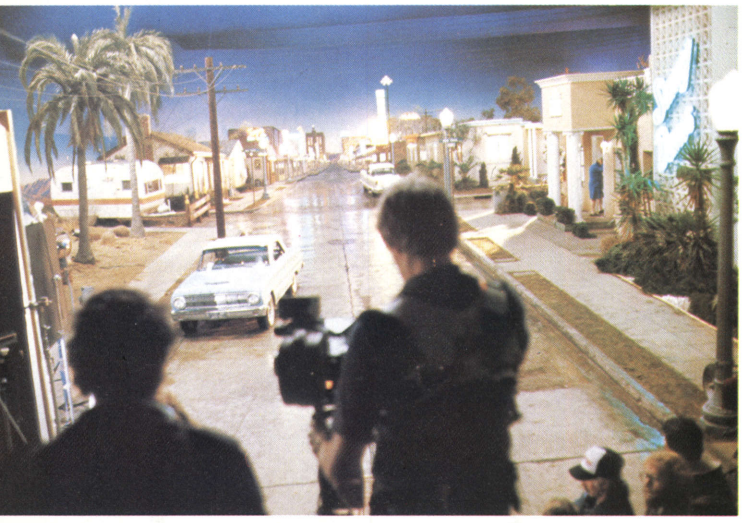
All hands on the set pause to listen, as fresh instructions arrive by speaker and headset from Francis Coppola's video redoubt, the Image and Sound Control unit parked off the set. (BELOW) Storaro gets involved with every aspect of his shots. Brown says he is the world's best guide, lookout and line-backer for the Steadicam. Here they maneuver in traffic during a complicated four-minute dance sequence.

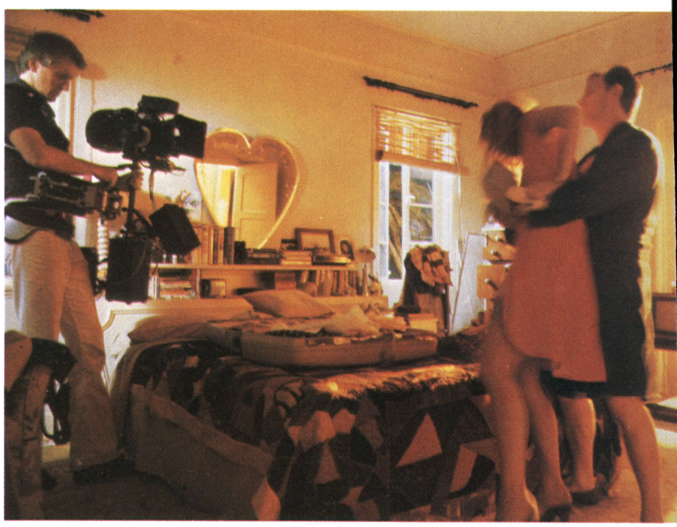
was around, even the technical stuff seemed to work better. We were driven mad at times by the difficulty of getting a simple playback, due to the layers of "iso-operators" and "image engineers" that one had to subpoena deep in Tom Brown's amazing Electronic Cinema department, only to find them involved in mysterious and arcane "other operations" relating to entirely different aspects of the picture. And yet in a pinch, it was great to watch the embryonic control of all of these elements suddenly produce a perfectly synced music cue on the set, or a whimsical sound effect, or a choice edit instantly played back that could be extremely useful for figuring out some bit of business, or to inform key members of the cast or crew what had to be done to get from *a* to *b*. For myself, I was now and then yanked back from the brink of amusement by the realization that *it works!* This is the beginning, and the innovator must be given some latitude for error; and his due credit ... (as has been elsewhere widely reported!

For his part, Francis supported or sometimes endured Vittorio's penchant for shots that became extravaganzas of lighting, with suns coming up on screen and immediately going back down, (slates often read "evening sunrise" or "morning sunset"!), and with lights spontaneously fading in and out, as Vittorio orchestrated mystical color-sensitive auras to intensify the actors' personalities and moods with wavelengths that influence fundamental emotional and metabolic responses from the viewer. No one is sure of the final effect of all this upon an audience. We will have to wait for the reactions from the august and the humble, but I can report that the reaction from Jim Blair and his loyal electricians must have been seen to be believed. They progressed from stunned amazement at what was being required of them, to a form of enthusiasm for the carnival of activity at the dimmer board that accompanied many of the shots in the picture. To no one's surprise, the results seemed exactly suitable to Dean Tavoularis' fabulous, theatrically claustrophobic sets.

Regarding the use of the Steadicam and all of the other tools at the disposal of

(LEFT) Garrett Brown slips between moving cars with the Steadicam ahead of Frederic Forrest "on the prowl". Soundman Chris McLaughlin went through the Steadicam school in order to understand the machine better, and it shows; he is an uncanny boom operator on these complicated shots. (RIGHT) Using a miniature video camera, Storaro lines up a shot for the absent Steadicam during technical rehearsals. (BELOW LEFT) Brown films a Steadicam shot from atop the crane. (RIGHT) "Hank and Franny" struggle with their relationship. These scenes took place on the fly throughout the complete and intact house set. Rapid moves, tight quarters and mirrors provided a constant challenge for camera and sound.





our "Designer of Photography," I remain impressed by the consistency of Storaro's vision and the idea-directed nature of his work: infuriatingly self-confident, unswerving, willing to take chances based on careful thinking as well as impulse; he is a phenomenon. He is also, by the way, unquestionably the best scout, guide, and line-backer for Steadicam shooting that I have ever come across. In a letter once I jokingly mentioned that if he ever gets tired of cinematography and desires frequent travel he can name his price to guide me around the circuit! For instance, on the Las Vegas street dance number, as I found myself backing at high speed through narrowing openings between cars and shooting the gap past extras and gyrating dancers; Storaro was always just outside the frame, nudging people out of the way, warning *sotto voce* of the oncoming curb and the next three obstacles, cueing cars, zooms, lights, dialogue, and the crane, while conducting a running dialogue about the upcoming compositional opportunities.

I had a great time working again with the Italians on Vittorio's crew. His operator, Enrico Umatelli; the assistant, G. (Roberto) Alberti; and the grip, Alfredo Marchetti are respectively masters of their professions, and were once more greatly helpful to me on this picture. I hope some day to be able to work with them on their home ground. It was a revelation to watch these guys making highly complex shots with the Elemack-supported jib arm (which I may even end up getting credit for from any rabid Steadicam afficionados.) It is a humbling experience to watch them getting an incredibly difficult shot in the first take or two, with no fanfare, just a muttered undercurrent in Italian; probably a discussion of the weather. They worked closely and harmoniously with the large and excellent American crew and provided an international atmosphere to the job which I think is still too rare in this country.

Storaro thoroughly understands the conventional machinery of filmmaking, and it was difficult for me to feel too indispensable as I watched a dolly shot he designed, operated by Tom Ackerman, which ran *ten minutes* and involved some amazing choreography: entire sets appeared and disappeared behind walls (which turned out to be scrims) as the dimmers rode up and down and the dolly traveled back and forth between at least thirty different camera positions. This with a BNC, folks, on a Vinton head. I found myself sitting on the sidelines chewing on the arm of a director's chair, wondering if I could have gotten this baby even if I *could* lug around a thousand-foot load. Ah well, we may get credit for that one too from those not paying too much attention.

Vittorio and Francis decided that, in

addition to shooting some of the dance numbers and the odd production shot on various sets, the Steadicam could be used to the best advantage in the picture to photograph scenes in which Hank (Fred Forrest) and Franny (Teri Garr) were together, during which their relationship was usually either breaking up or breaking up again. These emotional conflicts needed to be covered closely, moving with their energy, flowing with as little interruption as possible; and since their arguments and reunions usually took place on the move up and down stairs and in and out of doors around their house, the Steadicam was highly useful. "Hank and Franny's house" was constructed intact within stage four, complete with forced perspective suburban street and miniature freeway in the background. Another of Dean's amazing sets; full of steps, doorways and other Steadicam-requiring stuff. I was dismayed to discover that when Vittorio rehearsed my shots with the little hand-held video camera, he had been too cavalier about clearance in certain tight corners, and I sometimes had to fly the camera at high speed through places with less than an inch of room on either side!

This was also the home of The Elevator. A number of shots involved entrances and moves from room to room followed by trips up and down stairs. My assistant and I would jump on the elevator platform and since it moved with agonizing slowness, we would usually be only half way up as Fred or Teri neared the top of the stairs. I would boom up to the highest extent of the arm, climb up on an apple box on the platform, and still have to step up as much as two feet to the hallway floor in order to catch up before whoever I was shooting disappeared around a corner into the bedroom or bathroom to continue the scene. Francis must have been mostly unaware of all this from the van, and may have wondered what all the muffled curses and crashing sounds were on the track! Wild stuff.

The elevator also had loose scissor joints, so it tended to plunge wildly from side to side. It was a little like riding a camel in the basket of a balloon! As the mechanism got progressively more tired, it acquired the habit of sticking to the floor in the low position and then suddenly releasing like a catapult. (This frequently used up all of the possible "spring" in the Steadicam arm and my legs as well and deposited my assistant on the rafters. On descending shots, it finally began to hang up at the top and then suddenly let go and fall like a shot as the hydraulic fluid (library paste, I suspect) decided to let go.

Ultimately the damn thing refused to go at all, and I had one of those rare opportu-

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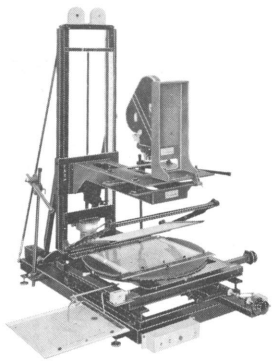

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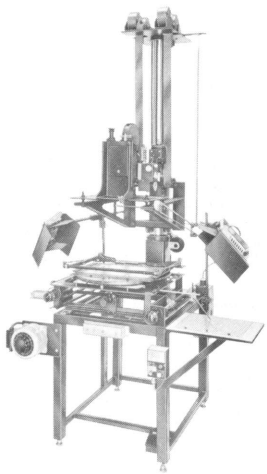

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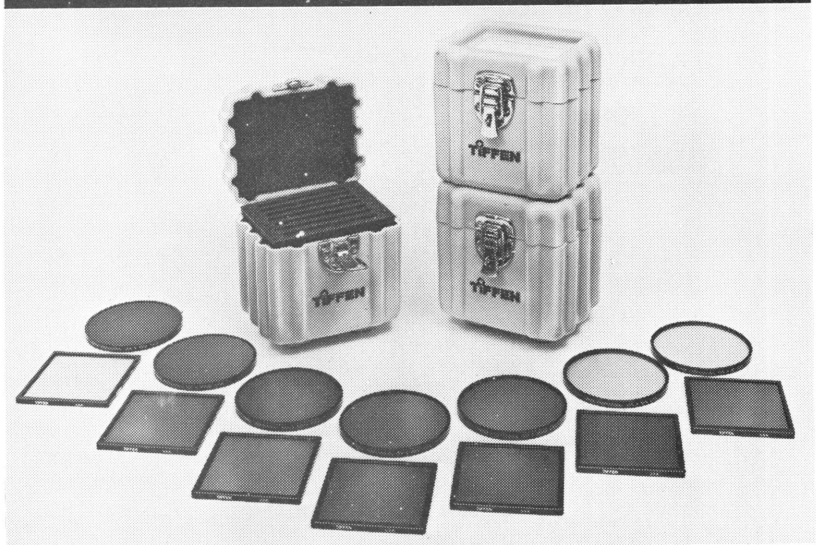

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nities to be spectacular. I had a premonition about all this and had asked our key grip, Bob Moore, to construct portable stairs with a ridiculously steep rise just in case, and so when the elevator died we brought in these steps which just fit into the opening. Now Jamie Anderson, with his focus box, had to get to the stairs first, climb up ahead and hide as I bounded up in time to meet "Hank" at the top of the real staircase. Both Fred and Teri were tremendously helpful in adjusting the speed of their business on the stairs until this lumbering sideshow could hoist itself to the summit. I felt like planting a flag up there with each successful take.

Otherwise, we had a great time in the house set. One shot, which may or may not be in the picture now, involved a careful progression of moments during Hank and Franny's final reconciliation, culminating in my quiet withdrawal from the house, pulling back to get on the crane and boom up and ride back to the farthest extent of the stage, to hold for three minutes of possible credits as the sun came up (or down, or both!) and our collection of indolent pigeons were released only to flap in circles down to earth and impersonate rocks. What a business!

The dance numbers on the Las Vegas street and on the Bora Bora set were exciting stuff for the Steadicam. High-speed choreography between dancers and camera, shots that went on for three or four minutes almost to the limits of endurance of cameraman, if not players Teri and Raul Julia ("Ray"). Wonderful stuff. We had to precisely hit dozens of marks, avoid shooting off the set, and manage one or two trips onto the crane for the high angles. Vittorio was a whirling dervish in orbit around the camera to get us through all this for each take. The biggest hazard was carbon monoxide from all of the picture cars maneuvering in close quarters on the stage.

As I write this, I am not sure exactly what will end up in the final version. It must be clear by now that this is a tremendously flexible production, and for a while the cut was changing more rapidly than the eye could follow. The Steadicam is just one of numerous techniques used to make this very special movie, and it wasn't necessarily integral to the mood or to some particular point of view, (as in THE SHINING or WOLFEN). Some early scenes have been rewritten or have acquired cutaways and coverage not originally planned, but I hear lately that quite a few of the shots are in the picture. In any case I am content that the Steadicam had a contribution to make to OFTH and it is only the most devoted fan of the machine that will actually get up and leave the theater if they recog-

nize that a dolly is in use! In spite of, or perhaps because of, some of the well-known financial cliffhangers during the production, the crew was great and the spirit was great, and one actually had a feeling for the possibilities of the studio system at its best, during the best of times, on ONE FROM THE HEART. ■

(ABOUT THE AUTHOR: Garrett Brown and Cinema Products Corporation shared an Oscar in 1978 for the invention and development of the Steadicam. Brown has since operated on numerous films, and continues to work on the advancement of this technology. He also teaches the latest operating techniques at twice-yearly workshops.)

VISUAL EFFECTS AS CINEMATOGRAPHIC ART
Continued from Page 81

the intended area can be quickly mounted, shot and viewed on immediate playback.

In actuality cinematography the video assist is indispensable when the camera is mounted on a Louma or Snorkel camera rig where camera operators cannot personally attend the independently mounted assembly. By use of remote controls for pan, tilt and cant, focus, iris adjustments and such, the camera pursues all actions intended. They are verified by the appearance of the required framing in the video monitor which can be positioned well away from the immediate sphere of operation.

One of the most labour intensive areas in general film production is that of film editing and it is here that computer control enters into its own. Whereas, heretofore, video tape editing techniques were similar to conventional procedures, computers now eliminate repetitive manual operations. By providing rolls of recorded videotape to storage facility derived from selected motion picture rolls, scenes can be researched and retried to assemble a desired visual continuity with added effects, plus accompanying sound in sync. Effect procedures call for the close cooperation of effects experts and motion picture editors.

As a consequence, editors and effect directors find themselves either closeted together over an editing machine or seeking to make appointments at screening rooms to view material under discussion. In the first place, time in the editing room is given grudgingly, owing to the high demand on machine time. The removal of personnel and material to be screened at a theatre demands time loss in terms of physical personnel displacement.

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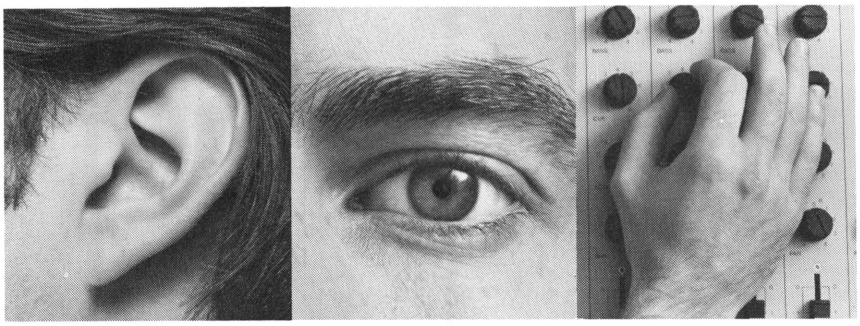

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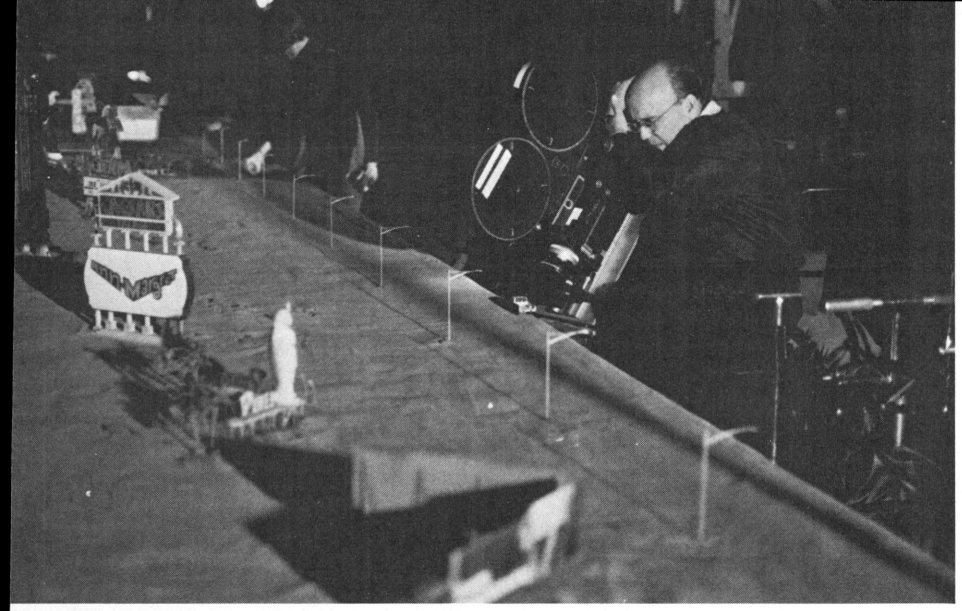
and its insertion for display on a monitor via a play-back deck, Should the retention of such a scene be desired for continuing reference, then the editor will supply a duplicate cassete bearing an image as good as the original tape. In this fashion the services of a motion picture projectionist or theatre appointment is generally unnecessary and work may continue at an undelayed rate.

Since the editor can proceed to unite a series of scenes in video through reference to their time code display records, he is able to experiment at high speed by reviewing and inserting such visuals as serve his purpose without constituting and reconstituting his original film records. In this way, he can display for his director a cut for approval on video tape without any handling of the original filmed material, and only on approval need he release such electronic notation to staff for the constitution of the picture for conventional laboratory procedures.

This very vast trial and error procedure can make for the maximum exploitation of the image potential contained within the original photography. The ease with which these pictorial assemblies can be stored, accessed and retried is open to exploitation by an excess of experimentation that can be misleading by diffusion of purpose. The efficacy of the original storyboard planning requires to be maintained as a prime objective and differences instituted on the basis of "happy accident" improvement, only.

Later we may anticipate such an editorial freedom as will permit a vast storage of video effects that may be catalogued as to the emotional response they occasion in a viewer and be on recall for use in a film being made with a specific end in view, like some artificial bloodbank. As it becomes ever more clear that the electronic cinema is here to stay and that video releases are made purely for Pay TV systems, then contentional film production procedures as we now know them will change. The near future will demonstrate distribution systems as yet unthought of with TV pictures appearing on one-inch-thick deeply curved wall-sized screens in three-dimensional color.

It is for this near development that Zoetrope has begun its practical foray into the electronic cinema and there is no doubt that the company is looking far beyond this single production venture. It is mindful of the large stakes that the "first in the field with the mostest" philosophy can achieve. Prototyping is a most expensive operation, as many have learnt to their cost, but the lure is golden and quite alluring. It is currently understood that film distribution and exhibition is suspect of "creative



Effects wizard Wally Gentleman, shown here lining up a miniatures shot, is of the opinion that since the creation of visual effects is a labor-intensive art, it is readily receptive to computer application. (BELOW) The miniatures for the opening sequence of "OFTH", while meant to be stylized rather than realistic, were meticulously crafted.

finance" procedures and there is hope that the electronic cinema might clear away the corruption through positive electronic accountability. Duplication of videotaped films and mass instantaneous releases will dispense with the need for inordinate publicity expenses and films will be seen more for their value than their hype. This, hopefully, will lead to greater responsibility for the measure of their product than presently exhibited by many contemporary film producers who aim for an audience of lowest denomination.

At present, limitations are still prevalent that make photographic filmmaking more pictorially desirable than the picture acquired by electronic means. This will undoubtedly change, but since man is a sociable animal he will continue to desire the social interaction that mass viewing of spectacle permits. Whatever the spectacle, the key to successful entertainment will be audience involvement. The days of passive viewing are coming to an end. Provocative large screen spectacles will be mounted in "experience" theatres with highly flexible audience seating and projection arrangements. The theatre will be combined with live action presentations set in entertainment complexes that will involve restaurants, gymnasiums, dance halls, roller arenas, etc., replete with child-minding facilities which, in turn, will embrace entertainment learning facilities and diverting game rooms where children can play while parents enjoy occasional release from responsibility with their peers.

The age of the computer will bring all this to pass within a very short passage of years and the electronic control of the media presented is the key to the extensive *divertissement* that will be offered to the public by film makers in fulfilling the increasing leisure time of the world population. ■

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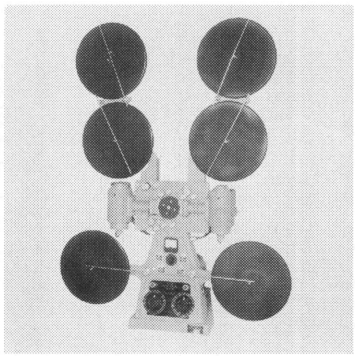

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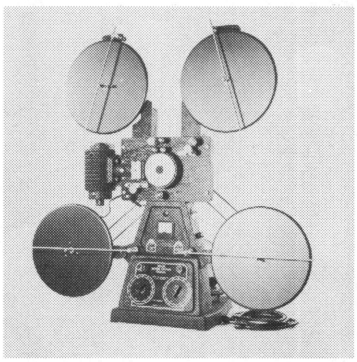

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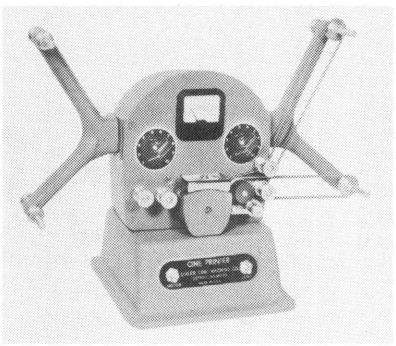

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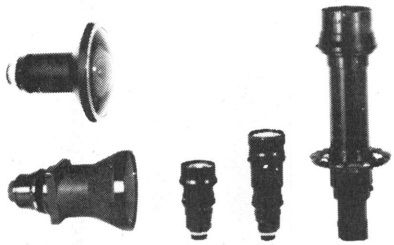

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Continued from Page 75

he looks up at her neon face, the girl is transformed into Leila (played by Nastassia Kinski) who flirtatiously sings a Tom Waits song *"Little Boy Blue."*

As the song continues, both Leila and Hank appear within elaborate Las Vegas neon signs and sets. Visual Effects Editor Kathryn Campbell and I looked through thousands of feet of real Las Vegas neon shot by Vittorio Storaro and neon shot on stage by Wally Gentleman. Since all of "OFTH" dailies had been transferred to Betamax cassettes, we worked with video editor Anne St. John to put the neon footage on videotape to get an idea of how the backgrounds would look. Kathryn did a rough storyboard to show how we planned new live action footage of Hank and Leila to fit into the neon. Francis Coppola approved the concept, so we went into production.

Bob Eberlein photographed Nastassia Kinski performing the song to playback against either solid white or solid black backgrounds. Black was used when a neon sign was superimposed over her. White was used when she was to appear superimposed over a neon background. This type of effect would normally be shot with blue screen matting techniques. However, some *"Little Boy Blue"* sequences required the actors to be lit by strong *blue* light, so blue screen was out. Others had to be lit by strong *red* light.

We shot tests placing actors in front of plain white flats and lighting them with blue then red light and a bit of normal color fill. Optical printer tests showed us that the technique would work for this limited application. I would not recommend it as an alternative to blue screen. There are problems, but our creative lighting requirements were too important to be compromised.

We spent three hectic days shooting the sequence, while Francis was using the same actors for additional scenes he was shooting on another stage. As soon as Frederic or Nastassia was through on one stage, they changed make-up and moved to ours.

We used a video monitor to help align Nastassia and Frederic to the previously shot neon backgrounds.

The compositing of the sequence was difficult because our design included many optical "wipes" which had to be animated specifically to fit the neon sign animation. The actors

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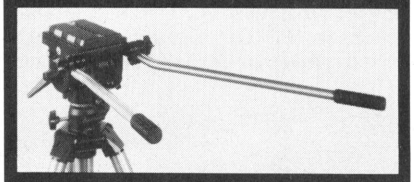

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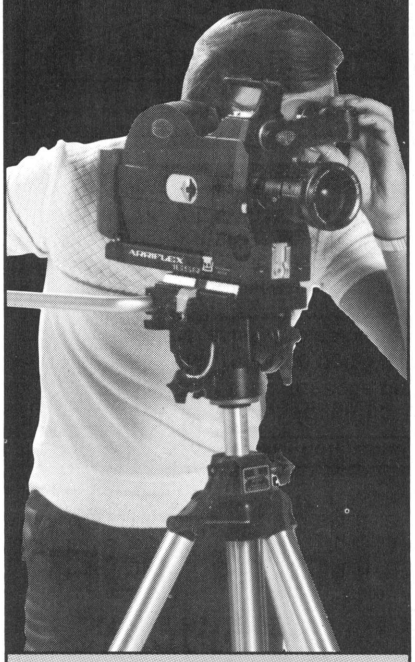

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appear and disappear within a neon world.

Many difficult optical printer effects were required for this sequence. The work was done at The Optical House by optical cameraman Ronnie Booth and line-up man Jack Hughes. One difficult effect used color separations to completely change the natural color of the scene. The original negative was printed on three separate pieces of black and white panchromatic fine grain stock through red, blue and green primary filters. Most of the neon was actually red and yellow. But sometimes for *"Little Boy Blue,"* we wanted blue, green and violet colors. By using the "wrong" color filters (such as a blue filter on the "red" separation record,) we made the change.

At this writing, we are still completing the final effects. A matte painting of Hank's junkyard "Reality Wrecking" and an aerial view of Las Vegas at night are in the works. Since the story takes place on the 4th of July we're adding fireworks into the background of as many scenes as we can, before we hit the deadline. Never a dull moment! ■

"OFTH" Visual Effects Personnel
From *July 1981*

Special Visual Effects by Robert Swarthe
Visual Effects Editor—Kathryn Campbell
Director of Miniature Photography—Robert Eberlein
Miniature Supervisor—Gregory Jein
Motion Control Photography by Dream Quest, Inc.—
- Scott Squires
- Hoyt Yeatman
- Tom Hollister
- Fred Iguchi
- Robert Waddell

Matte Artist—Rocco Gioffre
Gaffer—Foster Denker
Key Grip—James Lavin
Assistant Cameraman—
- Bruce McGregor
- Tim Warwrzeniak
- George Posedel

Assistant to Bob Swarthe—Tom Koester
Miniatures Staff—
- Larry Albright
- Michael Fink
- William George
- Ronald Gress
- Kenneth Larson
- Sharon Lee
- Nora Lee
- Nancy Mickelberry
- Nicholas Seldon
- Richard Thompson
- Rick Zarro
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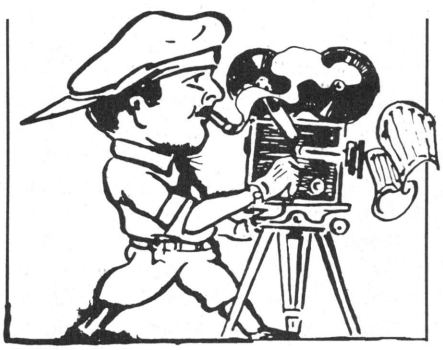
Visual Effects Secretary—Susan Kobata



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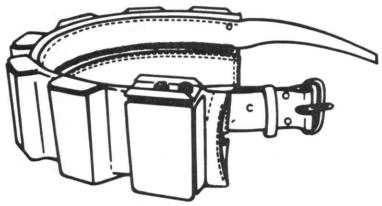

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REPORT ON EASTMAN HIGH-SPEED NEGATIVE

Continued from Page 47

people have even spoken about the possibility of delivering feature films to theaters via satellite. At best, this would be impractical. Even if you discount the high cost of launching and using communications satellites, the enormous capital investment which would have to be paid to equip theaters for video projection, and the tremendous difficulties in scheduling shows and localizing trailers, you would still be left with one impenetrable barrier: Even the best of the promised high-definition video systems will only be able to record less than one-tenth of the information that we can now put on 35mm motion picture print film.

The solution is much more likely to come from fast-emerging technologies for film origination with electronic/video assisted post-production. There has been tremendous progress in all of these areas during recent years. Now, we have a new high-speed color negative film which should go a long way toward helping the entertainment film industry meet its objective of producing more and better films while bringing the rising price of production under tighter control. ■

FILM AND VIDEO FOR "ONE FROM THE HEART"

Continued from Page 24

light and shadow; magenta and green; yellow and blue; cyan and red; it is energy."

In his interview for *American Cinematographer,* Storaro went on to say, "The entire film was shot on sound stages. Some night scenes actually shot in Las Vegas were filmed as background plates and we used a few of these. If we had physically shot the entire film in Las Vegas, it would be a more realistic picture, but it would not be ONE FROM THE HEART. This is a totally unrealistic picture. We are expressing subliminally the emotions of the characters—expressing them in a more theatrical way."

Asked to what extent he had an opportunity to pre-plan his photography, Storaro replied, "From the beginning our plan was to prepare the picture all at once—not scene-by-scene or sequence-by-sequence. We prepared the movie from beginning to end. When we started, Francis and Dean Tavoularis and I sat down and thought about what we wanted to do in the visual sense. We told our ideas to a sketch artist who made some drawings for each sequence. At the same time, the actors were rehearsing on video and recording their own voices reading the

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script. During that three weeks of rehearsal Dean was able to pre-design all the sets and, since they are all interiors and Francis owns the studio, those sets could occupy almost 100% of the stage space.

"After three weeks we had shot the picture on video from beginning to end. Some of the sequences which had been pre-designed looked very real, but others somewhat rough, mainly to understand the principle of the idea. But after three weeks we were able to see the whole picture in video form and decide which parts didn't work and would have to be changed.

"We tried to use the best ideas from radio, from the theatre, from television and from the cinema—and put all this knowledge together. One of Francis's first ideas was to shoot the entire picture on video tape and transfer to film, but I refused to do that because I don't think that today the quality of the transfer from video to film is good enough—but it will be soon. There is no question that in a few years the movie business will be totally changed, as the electronic system becomes more and more improved."

THE ELECTRONIC CINEMA: THE FIRST STAGE

Heralding what he calls "filmmaking's greatest leap forward since the advent of sound in 1927," Francis Coppola introduces the first-stage technology of the "electronic cinema" on ONE FROM THE HEART, a process which he feels will ultimately revolutionize the way in which movies will be made.

"I sit, I view the screen, I talk to the screen and the screen does what I tell it to," Coppola says.

Under the auspices of Thomas Brown, formerly associated with Lucasfilm's special effects team, the "electronic cinema" has achieved a direct film-to-video relationship whereby a frame-to-frame image of 30 fps (frames per second) videotape can be matched to 24 fps film.

The "electronic cinema" consists of three main centers of operation interconnected via cables. From the soundstages where video cameras are attached to film cameras with a standard beamsplitter videotape, and to individual Sony Betamax recorders with connecting monitors, the performance is fed to the Image & Sound Control vehicle.

Fulfilling dual production/editing functions, transmissions are both sent and received from this vehicle. Here Coppola can view and control the action from source monitors corresponding to the cameras and stage monitors, as well as make a "first impression" edit.

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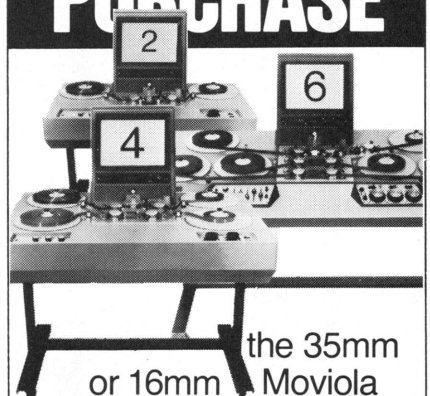

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composite condensed from an 8-track dialogue recording is mixed with sound effects and music and added to the video. Thus, a videocassette soundtrack approximating the final sound mix is generated during production.

The Image & Sound Control vehicle also serves as the editing center from which a more discrete version of the film emerges. Color videocassettes from the Transfer Facility are brought to this vehicle where they are edited on Sony Betamax units to conform to the "first impression" cut. Then a constant re-working of the material occurs, providing a continual upgrading of the accrued footage.

The Transfer Facility contains a Videola, time code reading and writing equipment, a video control console and videotape recorders. Here the camera's film is transferred to videotape. Information stored includes the film's time code, scene and take number, yellow edge number and key number.

Throughout the entire filmmaking process the "electronic cinema" constantly expands the filmmaker's creative options: the off-line editing system contains instant optical effects and dubbing capabilities which enhance the filmmakers creative choices.

The filmmaker's conception of the movie is improved as the script in its sequential moving form is available, months prior to the start of filming. This is accomplished via a "previsualization" process in which storyboard sketches are transferred to an "electronic video still store." Then the dialogue and sound effects previously recorded as a "radio play" are transferred to ¾″ videocassette. As these elements are mixed, a crude, but conceptually effective motion picture evolves.

Each new step in the electronic storyboard process enhances the filmmaker's conception of the film, so that a constantly refined and refreshed point of view actively engages the filmmaker's creativity.

By the time principal photography starts, the filmmaker possesses a judicious and carefully-formed opinion of his true intent of what his movie should be.

Remarkably cost efficient, the "electronic cinema" radically reduces post-production editing time, thus significantly diminishing interest charges on investment capital.

Creatively, the "electronic cinema" allows the filmmakers to continually preview the film. This advance opportunity to "see" the film leads to a tightening of the script and elimination of unnecessary scenes and sets, further cutting the cost of the movie.

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The state-of-the-art "electronic cinema" was utilized in the making of ONE FROM THE HEART, which Coppola directed from the Image & Sound Control vehicle. He feels that when audiences see the film, they will be viewing the result of the latest step in the evolution of the cinema. ■

CINEMA WORKSHOP
Continued from Page 16

allowing the excessive gases to escape through the orifice in the positive cap. It should be clear that as the excessive gases are escaping, the pressure within the cell is being reduced. When the pressure is once again within normal operating limits, the spring and rubber plate will reseal the cell. In all but the most extraordinary circumstances a NiCad cell is not adversely affected by one or two such gassing incidents and can continue to deliver normal performance. It takes quite a significant loss of electrolyte before capacity of the cell is reduced.

This resealable vent is found on most premium NiCad cells. However, several less expensive designs employ this so-called "can opener" vent. This type of vent is a one-time only device. Even the lightest excursion above the pressure limits of the cell could cause the "can opener" vent to activate, which effectively destroys the sealed cell.

This graphic representation of a NiCad Cell should help to illustrate some of the points we have covered. The mechanical vulnerability of the cell should be apparent. While the NiCad is one of the most rugged cell designs, it should be obvious that a sharp rap on the outside case could cause a dent that would pinch the tightly-wound plates together. Such a pinch could eventually wear through the thin separator, causing the two plates to touch. This would create a short circuit rendering the cell useless.

The vital role of the very thin separators should also be obvious as well as the critical function of the gasket. Both these items are made from organic materials and will decompose with age. Under normal circumstances, this aging process can take 10 years or more before adversely affecting performance, however, excessive temperatures can rapidly accelerate this deterioration to months instead of years. ■

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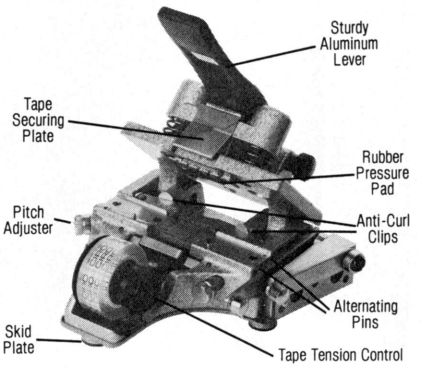

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IFPA WORKSHOPS FOCUS ON NEW TECHNOLOGY

Continued From Page 65

technologies currently in popular use, including photo conductive imaging and solid state charged coupler devices as well as the flying spot scanner.

While describing the operation of the Rank Cintel Mark III telecine, Kempt pointed out that the capstan which drives the film is also the sound recording head. "There is no displacement of sound," he says. "One of our objectives was to make the quality of sound equal to the quality of the visual images."

Because of the safe operation of the capstan drive, more producers now feel more comfortable turning their original negatives over to flying spot scanner operators, he said, assuring the delivery of first generation quality transfers.

The next challenge will be the development of methods for time-coding film so the transfers will be compatible with the state-of-the-art in computerized video editing. "We are working toward the solution of that problem now," he promised.

Les Novros, President of Graphic Film Corporation, posed a number of questions about how and whether audiences are influenced by the way visual elements are combined on film. He asked: Do specific colors or shapes hold special meanings for audiences? Is a movement toward the camera stronger than one away from it? How about directions? Some directors believe villains should always enter a frame from the left side, Novros noted by way of example.

Many of these topics are taught as principles at film schools; however, Novros believes that such formulations are obsolete. "All I can say is, let the filmmaker beware," he said, adding that there are principles of film design which can come out of a thorough study of the motion picture art. In the end, though, the decisions must be made by the individual filmmaker, Novros concluded.

Media Psychologist Dr. Gary Witt focused on the psychology of information design. "What the sponsor is buying is a channel for delivering a message that is remembered," he said. The challenge of media psychology is finding techniques for getting ideas into the audiences minds and keeping them there, he said.

Good examples are the McDonald's and Coca-Cola commercials which have more to do with familiar association of these companies with positive emotions than with products, Dr. Witt noted.

Ed McTighe, president of Slide Transfer Service, reported on new techniques for transferring slides to film and video. "Many multi-image producers and users

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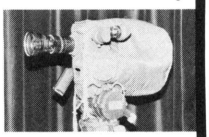

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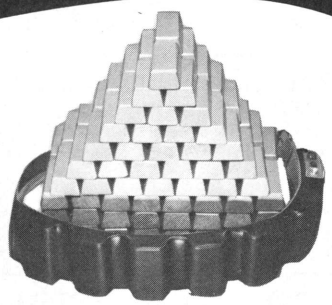

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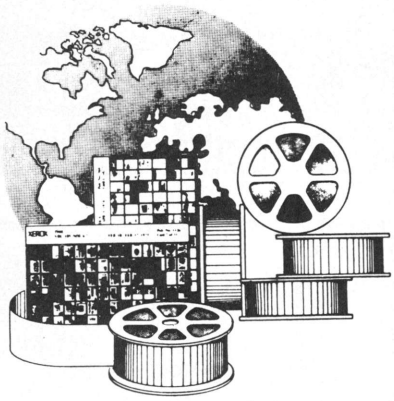

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are now transferring programs to film, which is more appropriate for presentation in many situations," he said.

Also, slide-to-film transfer technology is being used to create special effects inserts in motion pictures as well as for titling, he said.

Midocean Motion Pictures executive producer John Green described the latest technology for creating images with the assistance of a computer for transfer to high-resolution films. "The thing that *2001* gave us was the beginning of a capability for taking a film frame apart and rephotographing it," he said. "We now routinely make 200 passes at a film frame adding different elements each time. The computer drives the system and remembers where we were. Photography is done off of a video tube or artwork is created with a computer-driven plotter before it is then photographed."

Dave Bell told the audience how his company (Dave Bell Associates) sold its first two documentaries to HBO. Both films deal with tough, hardhitting topics, he said.

Dave Bell and Associates is primarily a producer of non-fiction films for TV syndication. *Scared Straight* was a milestone," he said, "because it proved to programmers that the public will watch documentaries. No one had an inkling how successful that film would be until it was aired."

Bell said that most of the documentaries made by his company deal with the same global issues tackled in network "white papers," only his films are personalized by focusing on individuals and they are aggressively promoted. "We produce our own promotional packages for every documentary," said Bell.

One rule of thumb is that every documentary produced by his company must be entertaining and fast-paced. We don't want audiences tuning to another station because the pacing slows down," he explained.

Production is usually done with four-person crews with 16mm equipment and color negative film. "I believe in strong imagery, which is why we usually shoot at a 60:1 film ratio. However, our crews are trained to fade into the woodwork. The camera and crew are always as unobtrussive as possible. The objective is to show the audience what life is really like for the person or persons featured in the documentary," he said.

Once a documentary producer succeeds, ideas tend to beget ideas, said Bell. "One parent contacted me after *Angel Death* aired because she thought he saw her run-away daughter in the film," said Bell. That led to the production

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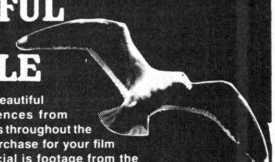

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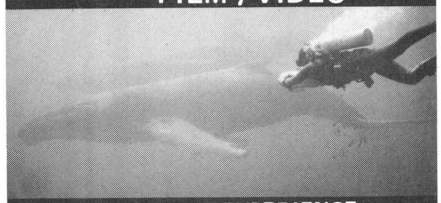

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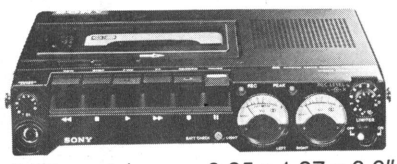

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of a touching followup documentary titled *Whatever Happened to Lori Jean Lloyd?*

Bell said all of his documentaries are edited on film. "Nothing beats a talented film editor sitting at a Moviola," he said. "When we find people who can do that job right we hold on to them."

"The problem with video editing in the documentary field is that the meter is always running," Bell commented. "I don't care how conscientious the producer is, there is a limit to how long anyone will let the meter tick. In comparison, when one of our editors is stuck, he'll screen the film for the producer and writer and they'll discuss ideas. A creative process takes place. A point of view emerges. I just can't see us doing that on a documentary budget if we are watching the meter tick on a video editing system." ■

INDUSTRY ACTIVITIES
Continued from Page 48

receives the highest rating of all of the winners. The JOHN GRIERSON award is a cash prize, presented annually to a new filmmaker who shows outstanding talent in the social documentary field. Awards will be presented at a special ceremony on Friday, June 18.

FESTIVAL CIRCUITS. Following the 24th annual American Film Festival, the Blue and Red Ribbon winners will be circulated to EFLA-member institutions throughout the country, where the films/tapes will be showcased in free public screenings in major libraries, schools, and universities. These circuits bring the best of the American Film Festival to thousands of additional viewers who benefit from this opportunity to preview films and tapes they may later use for local programs.

•

THE 15TH HUMBOLDT FILM FESTIVAL

The Humboldt Film Festival will be held May 11 to May 16 in Arcata, California. Entering it's 15th year the Festival is open to student and independent filmmakers working in 16mm.

All 16mm films of under 60 minutes, either silent or optical track, submitted by April 30, 1982 will be entered in the competition. Entries will be pre-screened to select films for public programs; entries not selected will however remain in competition and will be screened for the judges.

Cash prizes totaling $800.00 will be awarded. Past judges have represented both the industry and independents from all aspects of filmmaking with some emphasis placed on geographical diver-

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sity. Previous judges have included Judy Irola, Walter Murch, Ralph Rosenblum, Barbara Linkevitch, Bob Elfstrom, Ronald Chase, Marcia Lucas, Don Lloyd, Les Blanc, and Frank Capra.

A list of winners, critiques, and posters will be returned to all entrants. Winning films will be screened as a separate "BEST OF THE FEST" on May 14, 15, 21 and 22 and are held until May 24. With permission of the filmmakers, the "BEST OF THE FEST" may also be aired on our local PBS affiliate.

Entry fees are $15 for students and independents and $25.00 for distributors.

For entry forms and information write:

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ENTRIES INVITED FOR U.S. INDUSTRIAL FILM FESTIVAL

The U.S. Industrial Film Festival has announced that entries are now being invited for the 15th annual awards competition, and should reach festival headquarters prior to March 1, 1982.

The festival is the world's largest international event devoted exclusively to selection and recognition of 16mm motion pictures, 16mm & 35mm filmstrips, 35mm slide programs, ¾" video cassettes and video discs.

There were 900 entries submitted from 16 nations for the 1981 competition including the Peoples Republic of China. Over 250 film and communications professionals participated in the judging.

The festival is the only competition in which judging is separate for commercially and noncommercially produced (government, university, and in-plant) productions. First place "Gold Camera Awards" and "Silver Screen Awards" are offered to winners in twenty-four categories of subject matter.

Additionally, special awards are sponsored by various segments of the industry including Dukane Corporation, LaBelle Industries, Back Stage Publications, Technical Photography, The Chicago Film Council, and the Chicago Audiovisual Producers Association.

Awards will be presented at an evening banquet on May 21, 1982 at the Drake Hotel in Chicago, following a two-day program of speakers and screenings of award winners.

Information and entry forms may be obtained by writing to the festival at 841 North Addison Avenue, Elmhurst, Illinois 60126, U.S.A., Phone: (312) 834-7773, Cable: FILMFEST: Elmhurst. ■

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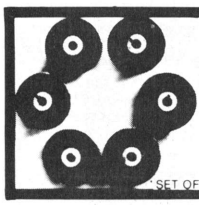

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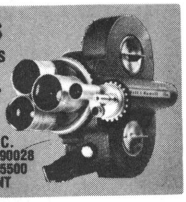

THE ELECTRONIC CAMERA
Continued from Page 79

the film in his hotel room, utilizing the ever-reliable Sony 383 Betamax with the hotel room TV as his monitor.

In preparing the final cut of the film, both electronic and conventional film editing was utilized. Post-production Supervisor Rudi Fehr cut film on an upright Moviola. Editor Ann Goursaud did most of her film cutting on a KEM, while Francis and his son Gian-Carlo worked on Betamax in the control vehicle. They would come up with an idea for structuring a scene, then show it to Ann and Rudi. The exchange of ideas could also work in reverse, with Rudi or Ann making their own film cuts, which would then be viewed by Francis and if approved, transferred to video. Whatever editorial combinations Francis might want to try could usually be achieved much faster on video.

THE FUTURE

We think that these ideas will alter the movie-making process for the better. Francis considers this experiment so successful that we are now planning a much more integrated system, connecting a console or composing table at which a filmmaker could work on both script and picture editing simultaneously.

On the subject of video tape editing systems, we have found all existing systems woefully inadequate from the standpoint of editing for the cinema. Our next system will be designed to access and control vast amounts of source material—a giant data base of words, images, sounds, music and ideas.

Our experience on ONE FROM THE HEART has demonstrated overwhelmingly that traditional film craftsmen welcome tools which allow them to do their jobs more effectively. We hope the coming Electronic Cinema will not be feared but met by inquisitive minds who will help us develop it and encourage artists to utilize science and technology.

The ONE FROM THE HEART crew were surprised to find how easily they could adapt to the pervasive video technology around them. With no prior experience in video, the technicians found that they could use the electronic tools at their disposal and even came to depend on them. High-definition video as the raw stock of the future will no doubt find its defenders in much the same way.

Electronic cinema will eventually cease to be an auxiliary tool of the filmmaking process: it will *be* the process, and the benefits to all concerned virtually limitless. ■

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ARRIFLEX 16SB camera, V/S motor, 3 Cooke lenses, belt, excellent $2,895. INTERCAM, 383 East 17th Street, Brooklyn, NY 11226. (212) 469-9472.

PACER ME-4/VNF color processor 16 & Super 8mm AT15FPM $1,600. P.O. Box 5371, Vallejo, CA 94591.

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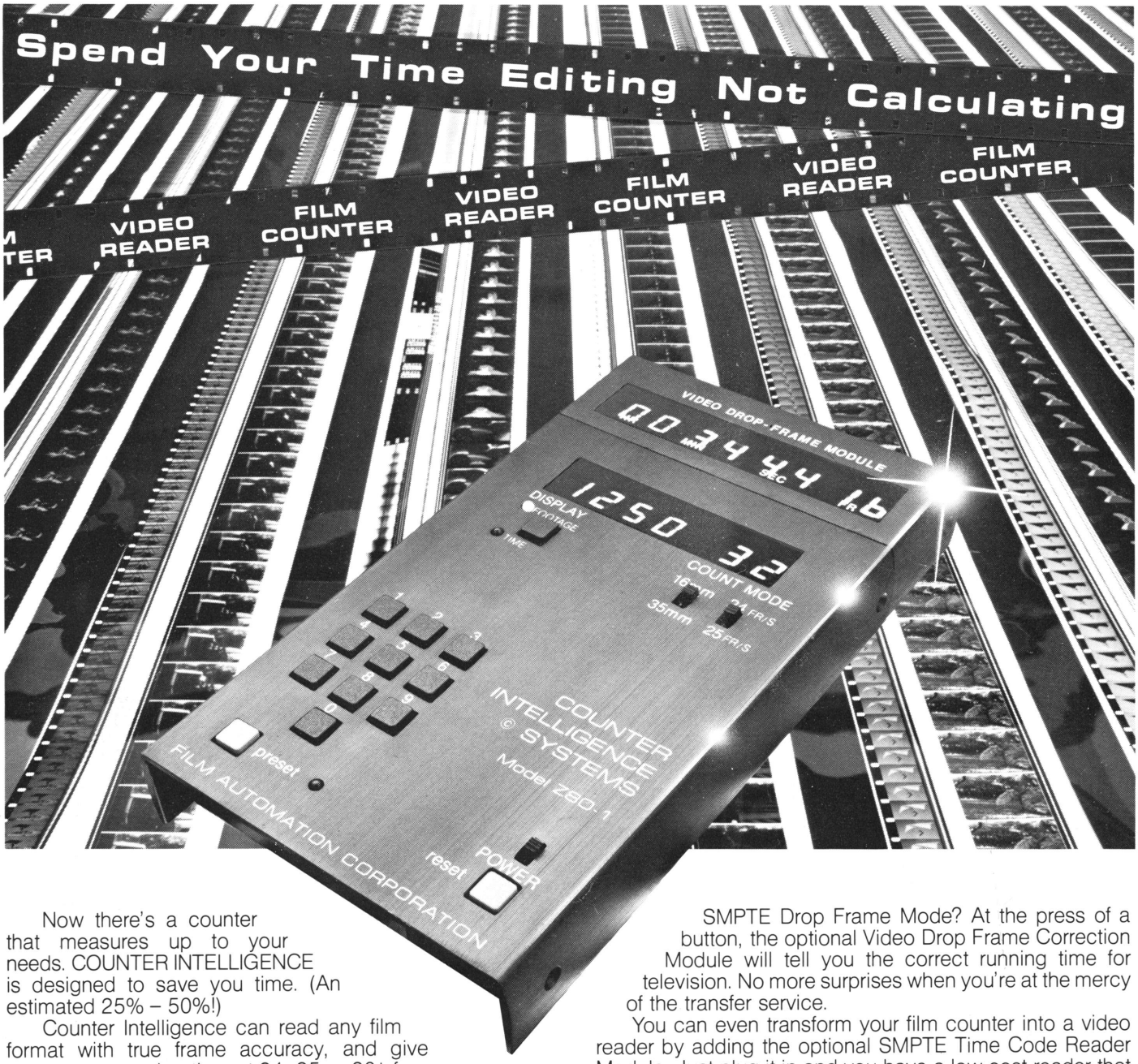

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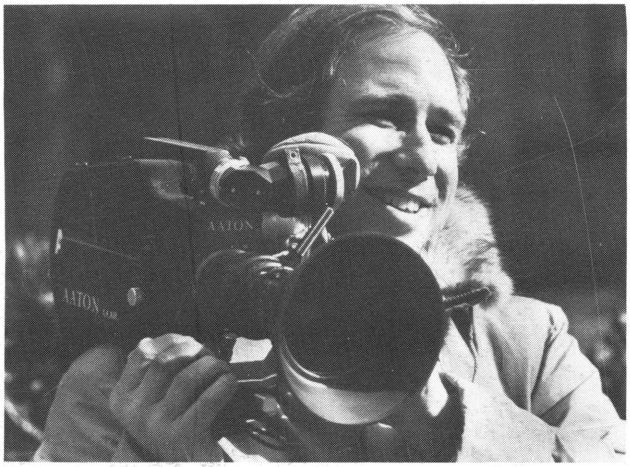

Dave Grubin on-location for "The World of David Rockefeller," the 90-minute documentary he produced for WNET's "Bill Moyers' Journal."

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Greg Cooke filming another "60 Minutes" segment with his distinctive "shoot-from-the-hip style" of cinematography.

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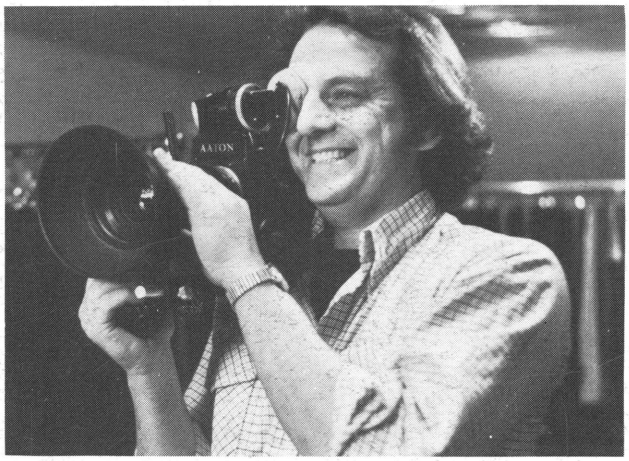

Chuck Levey shooting a segment of CBS' "30 Minutes." Other assignments from the network include "60 Minutes" and CBS Reports.

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